Famous Artists Course

Famous Artists Schools, Inc., Westport, Connecticut

Perspective for the artist

Lesson 10

Albert Dorne

Fred Ludekens

Norman Rockwell

Al Parker

Ben Stahl

Stevan Dohanos

Jon Whitcomb

Robert Fawcett

Peter Helck

George Giusti

Austin Briggs

Harold Von Schmidt

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Everything looks smaller as it gets further away. Parallel lines meet at a point on the horizon called the vanishing point.

Perspective for the artist

In Lesson 2 on Form we emphasized the fact that a drawing is an interpretation of an actual object on a flat surface. We told you that all objects have another side, that they diminish in size as they recede in the distance from the eye. Perspective is the art of representing these actual objects on a flat surface so that they appear to recede in the distance and create the illusion of depth. Perspective gives you the true length and direction of a receding edge or a receding side of an object. In intricate forms, perspective looks difficult. It is not. It is only the extension of a few simple formulas. If you understand these formulas, applying them is relatively easy. It is our purpose in this lesson to explain these formulas and show you how to use them. We will use familiar subjects and the problems you are most likely to meet in your work.

Most artists deal with perspective in one form or another every time they draw a picture. Usually, they draw objects freehand. If the drawing does not appear correct to the eye, they enlarge, change and shift lines until it does. Sometimes, however, the drawing continues to look wrong. The artist must then look for a cure. The cure is knowledge of perspective.

In Lesson 2 you learned the basic principles of perspective. If you studied that lesson carefully, you know the meaning and use of a horizon line and vanishing points. Above all, you know the most important rule of perspective: Objects appear to become smaller with distance.

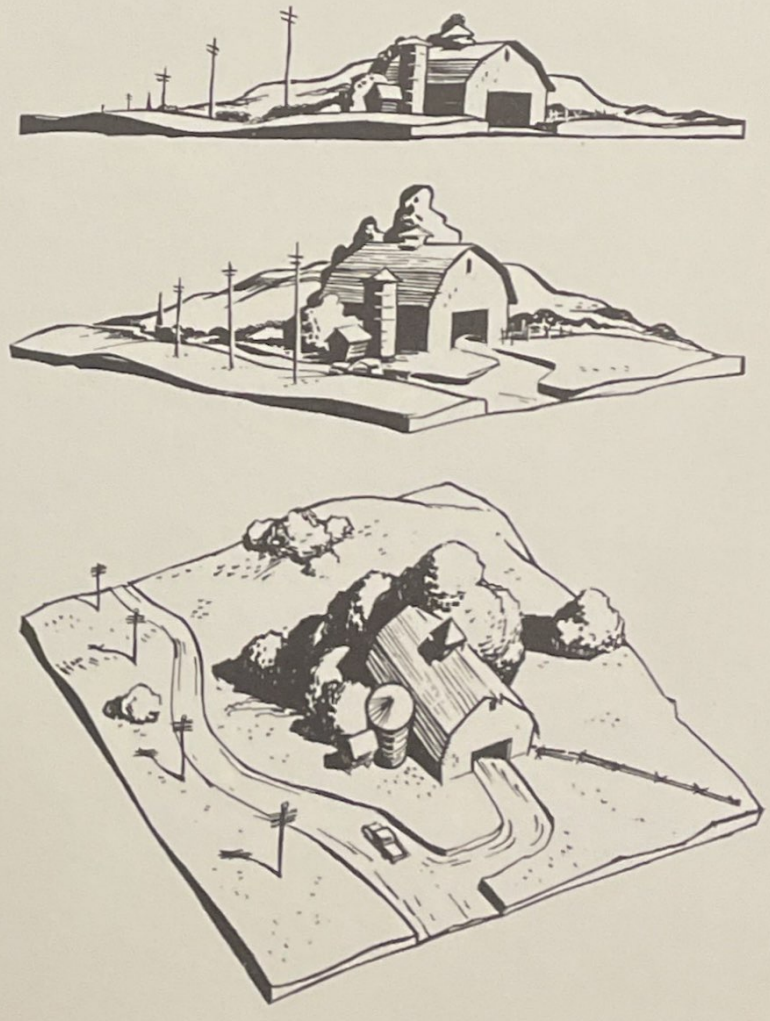
In this lesson we want to show you how to make more accurate and convincing drawings through a fuller understanding of perspective. We will study the kind of simple artistic perspective that is most useful for the artist and illustrator. We will avoid complicated areas of perspective that would be of interest only to architects, engineers, or technical illustrators.

The most important single object in learning perspective is the cube, which will be the basis for most of our examples and diagrams. (As in earlier lessons, we use the word cube to mean any boxlike form that is based on the cube.) Starting with the cube, we can draw circles, ellipses and even people and animals in perspective. Once you understand the principles of drawing the cube in perspective, you will find it relatively easy to apply them to other objects.

Although perspective can be demonstrated most simply with regular man-made forms like railroad tracks, signs, and houses, the same principles apply to all forms. The illustration on the opposite page provides us with an obvious example. The control of the perspective of "free" forms like trees, mountains, clouds, men, and birds is just as important to the visual correctness of a picture as is the proper construction of man-made forms such as suitcases and airplanes. Perspective is a fact of seeing, and things will look normal only if they are drawn in perspective.

To draw a view of a road twisting through the country the artist must be aware that the road tapers as it turns away and widens as it comes forward. Below the eye level the width of the road is easily recognizable. The section of the road that is level with the eye appears as a thin line, while above the eye level the road cannot be seen. Banks of overlapping clouds that float overhead and disappear towards the horizon obey the same laws of perspective that are seen in the pattern of tiles on a ceiling.

Perspective is a useful tool for the artist, but it is never a substitute for careful observation. At times he may even find it necessary to distort the perspective, in order to create a more dramatic picture. In the final analysis, it is the artist's experienced eye that tells him whether a picture or drawing is right or wrong. But a sound understanding of perspective will equip him with a more acute sense of observation and feeling for form, and help him to make his pictures more convincing and satisfying.



As the eye level changes, what you are able to see of the scene changes. When the eye level is low, the barn, trees, telephone poles, etc., are silhouetted against the sky and the road cannot be seen. As the eye level gets higher, you look down on the scene, and the road becomes more easily recognizable.

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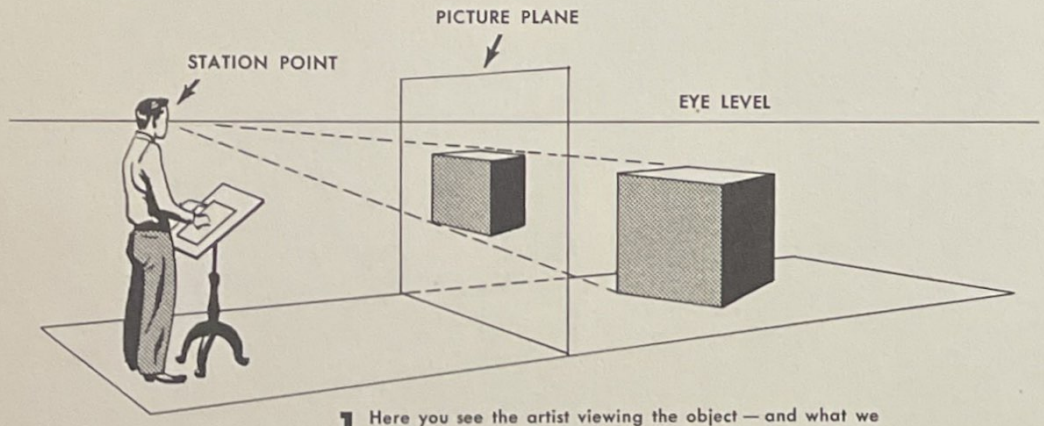
Look out a window.

Draw on the window.

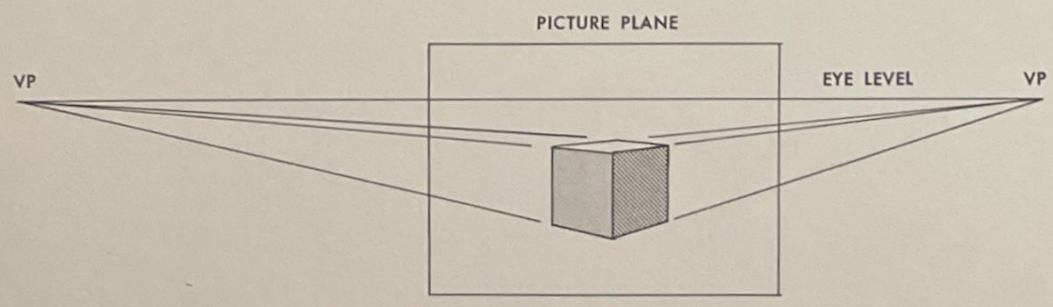
After dark, look at the window. This is the picture you drew.

This is what happened:

You drew a three-dimensional object on a two-dimensional plane. When you make a drawing, the surface of the paper represents this two-dimensional plane — which is known as the picture plane.



1 Here you see the artist viewing the object — and what we mean by the imaginary picture plane. The broken lines help to demonstrate how the lines of the object are carried along the artist's line of vision to his chosen picture plane.



2 This is how the object looks to the artist on his picture plane. The vertical lines of the object remain vertical. The horizontal lines take a diagonal direction. They run far out to the vanishing points on each side.

The picture plane

The drawing you make on the window shows you that what you know to be actually a long side of a building is represented on the window by a very short line. You cannot draw on windows all the pictures you may wish to draw, but the window drawing shows you what happens. You draw the illusion of depth on a flat surface. The window is the flat surface. It is, to the artist, what is known as the picture plane.

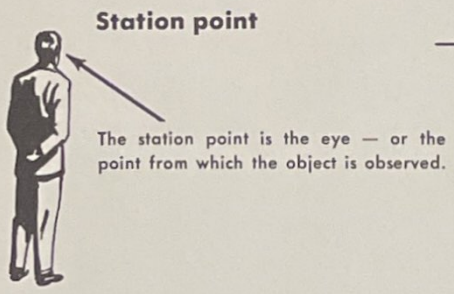
The artist has an imaginary vertical window or picture plane always before him. What he sees or imagines as three-dimensional objects he transfers to the two-dimensional surface of the paper before him.

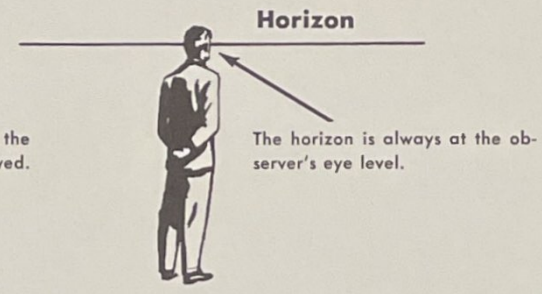
How large or how small the artist makes the object he is drawing is determined by the position of the picture plane between his eye, or viewpoint, and the object. The closer the picture plane is to the object, the larger the image appears.

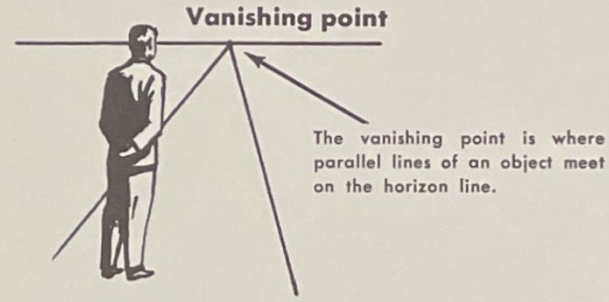
You do not have to be actually looking at an object through a window — you can imagine the scene, can visualize it. However, the same process occurs. You remember or imagine the scene and have an imaginary vertical flat picture plane before you. You draw on your paper what you "see" on the imaginary plane.

If you study the diagrams on this page the meaning of the picture plane should be clear to you. In Diagram 1 you see the figure standing, the eye level and the cube. Between the figure and the cube is inserted the imaginary picture plane. In Diagram 2 we show the cube as it appears to the eye of the man in Diagram 1. We have run the lines of perspective out to the vanishing points — this is the correct picture as it would be seen from the eye level or station point of the man.

Three basic terms of perspective



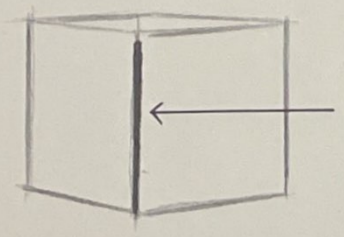




Sketching procedure

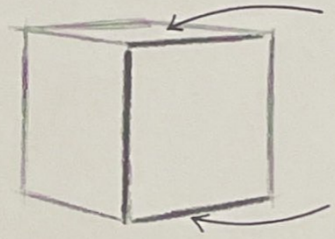
Station point has more to do with the appearance of an object than anything else. Most drawings look better if the station point is not too close to the object. When the station point is too near, perspective drawings look distorted and, for normal purposes, this should be avoided. As the station point changes ever so slightly, so must all of the perspective lines in the drawing.

When you start a drawing, it is best to make many rough sketches to establish the best view of the object for your needs — to establish the best station point. Drawings that require accurate perspective should first be sketched in freehand, as accurately as possible. Then make sure your drawing is in perspective by establishing your eye level and vanishing points.



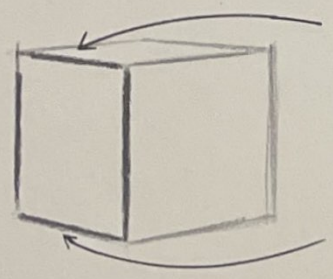
1

Draw, lightly, the general view and size you want. Then draw this line first. It is the one nearest the eye.



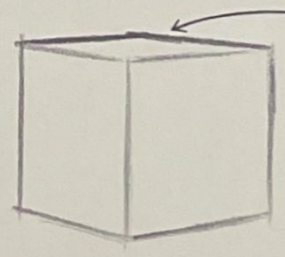
2

If more of this side is showing, put these two lines in next. Be sure they appear to converge in the distance.



3

Next, put in the other side. All lines on this side appear to converge in another direction. Be sure they do not converge at a point higher than the eye level, or horizon line.



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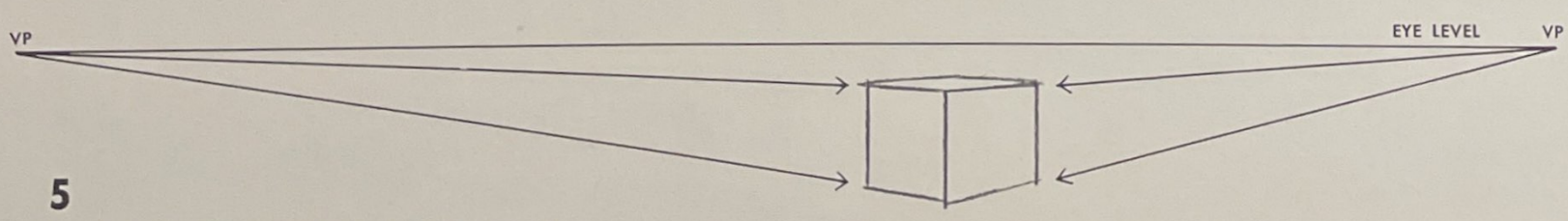
Now, put in the two top lines. Where they meet is the top of the back edge you cannot see.



5

Now check it by fixing the eye level and vanishing points. Then run your perspective lines across with a T-square or ruler.

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Three types of perspective

In drawing simple objects we find one, two or three vanishing points occur. In complicated objects there can be more. Objects having more than three vanishing points are called compound forms. We will study such forms later. For the present we will deal with one-point, two-point and three-point perspective.

One-point perspective exists when two dimensions (height and width) of an object are parallel to the picture plane. This means the object we are looking at is straight in front of us, not at an angle. In such a view there is one dimension — depth — left to be accounted for. This dimension must have a vanishing point. (Dimensions parallel to the picture plane have no vanishing point.) In the diagrams at the bottom of the page you will see that one-point perspective can occur in several ways. When you look at a cube straight on, the vanishing point is out of sight and behind it. If you were standing inside the cube you would be in the same position as if you were looking down the middle of a street. The right and left walls of the cube would represent the flat fronts of the buildings on the side of the street. In such a view all parallel lines appear to run to one vanishing point. (Except, of course, the lines parallel to the picture plane.)

In two-point perspective (see diagrams on page 7) only one dimension of the object — height — is parallel to the picture plane. There are two dimensions left. We must, therefore, establish two vanishing points on the horizon line. The closer together the two vanishing points are the less you will see of the sides of the object you are drawing.

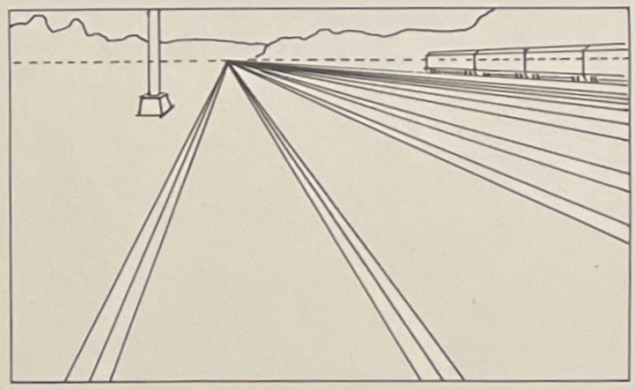
Since most objects can be reduced to a cube, when drawing a form in perspective it is customary to rough it in as a cube. This will help you decide how much of the side surfaces you wish to show in your drawing before you establish the two vanishing points. This procedure automatically fixes the station point or the view of the scene you wish to have. The vanishing points may be as close or as far apart as you wish them. In the diagrams on page 7 you will see that the horizontal edges of the cube become diagonals when drawn in perspective. The angle of these diagonals is determined by the closeness of your eye to the object. The closer you are the more acute the angle is.

Three-point perspective is used when the picture plane is tilted and is not parallel to any of the object's surfaces (height, width or depth). Three-point perspective is usually needed where the station point is close to the object — as when you are looking up at a large nearby ship or a tall building. The horizon is usually very low, or entirely below the object. If you are looking down from above, the horizon may not even appear in the view at all. A general rule to follow is this: Small objects usually look better in a picture if the three vanishing points are well separated. The perspective should not be acute. To emphasize the bigness of a building, sharp diagonal lines are important. Here the closeness of the vanishing points strengthens the effect you want.

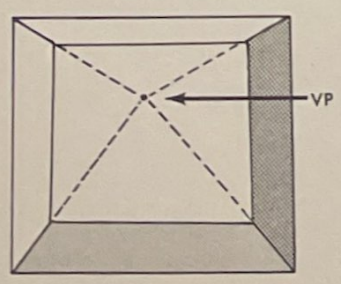
In any perspective drawing it is a good plan to first lightly sketch the general view that you wish. From this sketch "run out" your horizon line and find the vanishing points. Be sure that the horizontal diagonal lines end at the eye level line. One cannot be higher or lower than the other. Regardless of their distance apart they must be established on the same eye level.

One-point perspective

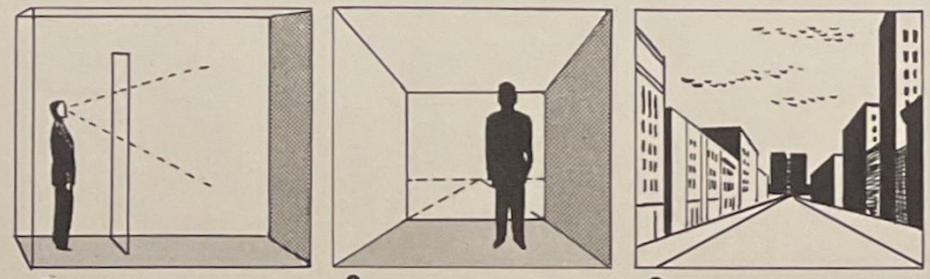
A splendid example of one-point perspective.



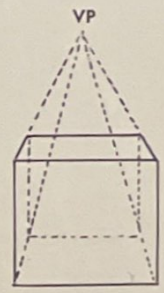
The lines of perspective all lead to one point.



This cube has two of its dimensions — height and width — parallel to the picture plane. The dotted lines running to the vanishing point represent the depth — the third dimension, which is not parallel to the picture plane.

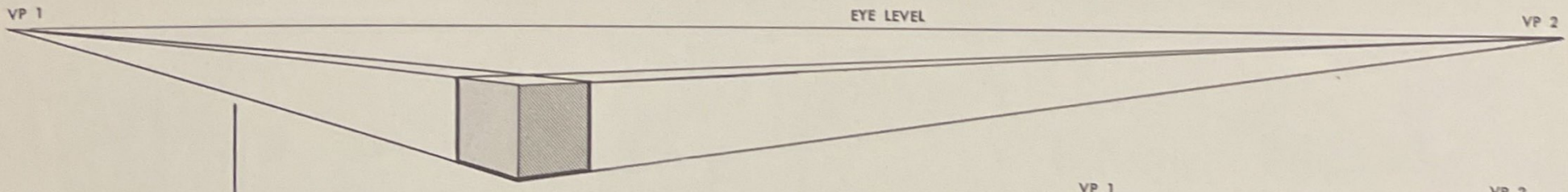


(1) If you were inside the cube you would see the inside walls of the cube. (2) They would all recede in the direction of the vanishing point. (3) Imagine these walls as the faces of buildings as you look down the street.

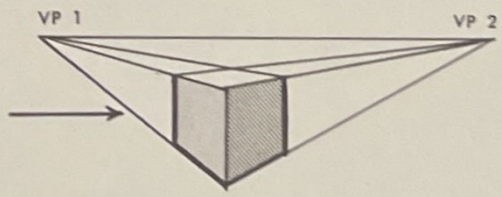


If you were looking down on the cube from above, the vanishing point would be placed like this.

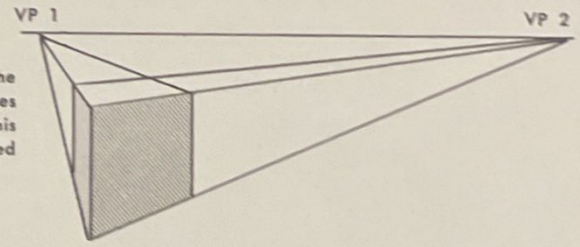
Two-point perspective

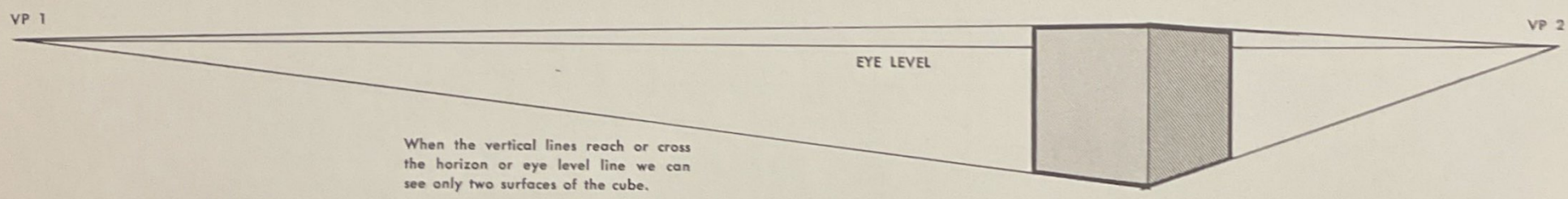


Notice how the diagonal lines leading from the two vanishing points become acute as the vanishing points are brought closer to the object.



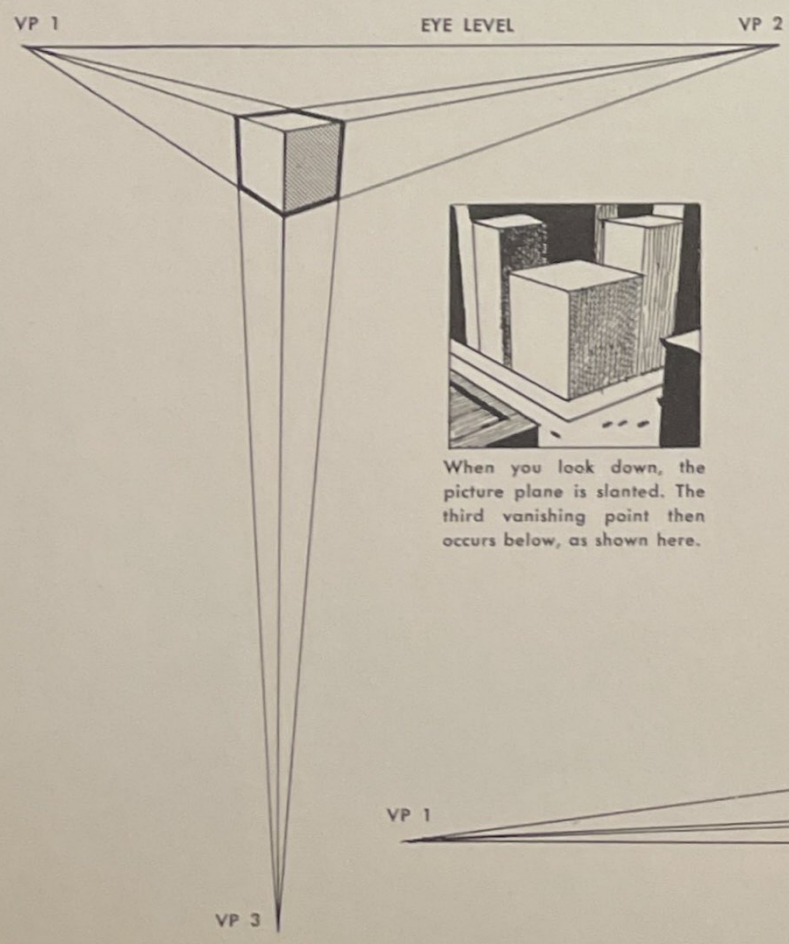
As we show less of a side, the angle of the diagonal becomes almost vertical. Views like this are unusual, but they are needed on occasion.



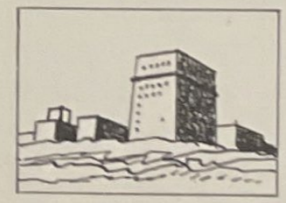


When the vertical lines reach or cross the horizon or eye level line we can see only two surfaces of the cube.

Three-point perspective



When you look down, the picture plane is slanted. The third vanishing point then occurs below, as shown here.



When you look up, the third vanishing point rises high above the object.

Drawing the cube in perspective from a plan view

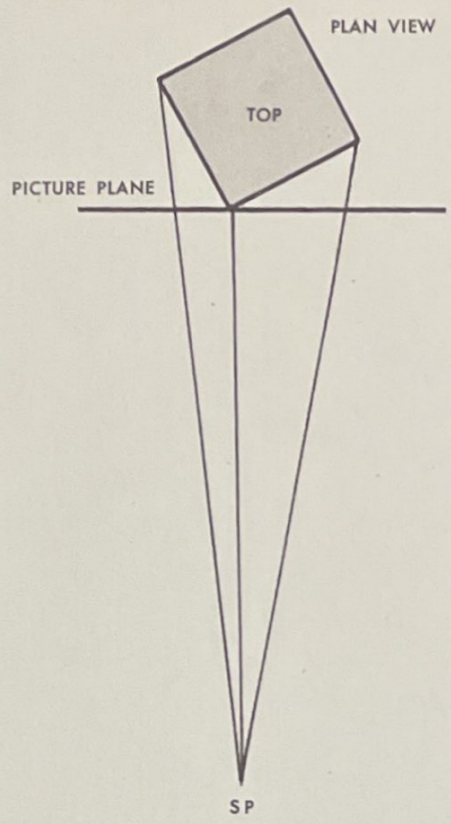
On the preceding pages we have explained the fundamental principles of artistic perspective. Now we will show you how to apply these principles to a specific problem – putting a cube into accurate perspective in relation to a definite station point and eye level.

With the application of this method the artist may draw an object as it would appear in perspective at any distance and viewpoint that he desires, using as information a scaled drawing of the top and side view of the object. This method is particularly useful in doing architectural drawings. Once you understand this procedure with the simple form of a cube, the more complicated forms will be easy to handle.

For Demonstration A two-point perspective will be used since we are looking at the corner of the cube and only one dimension – height – is parallel to the picture plane. For Demonstration B we use one-point perspective because the height and width are parallel to the picture plane and just the dimension of depth must be shown receding.

A

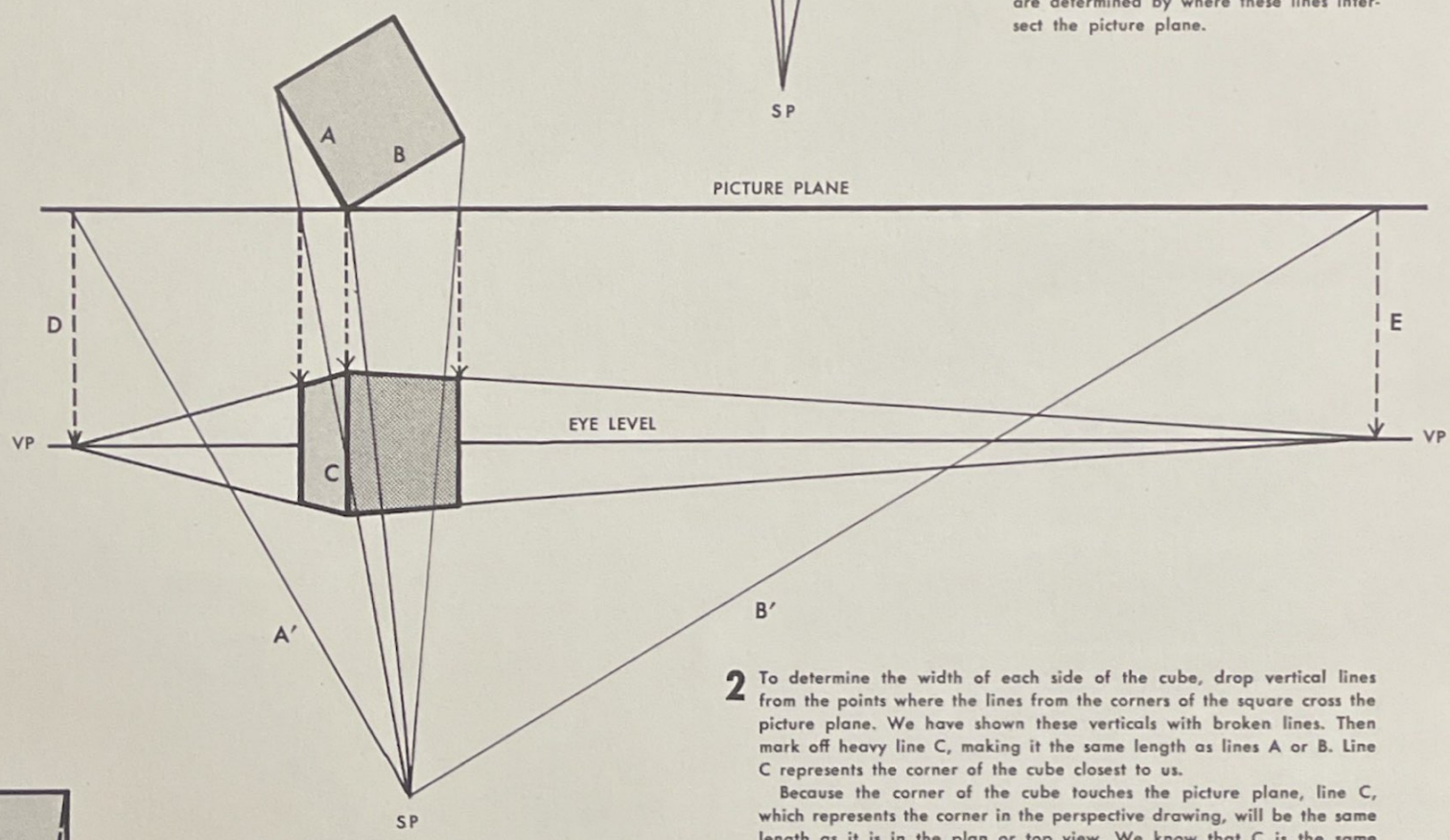
When one dimension is parallel to the picture plane



1 Imagine that you are looking directly down on top of the cube. Since the top of the cube is a square, draw a square on paper and establish the station point at a distance no less than three times the length of one side away from the cube. The station point is the spot from which you will view the cube to make the drawing.

Place a horizontal line (picture plane) between the station point and the square so that this line touches the nearest corner of the square. It is not essential to place it here; it might be placed at some distance from the square, but we are giving this position for the purpose of measurement, which will be discussed later in the lesson.

Draw lines from the corners of the square to the station point. (Remember that each corner of the square represents the position of a vertical corner of the cube.) The positions of the verticals on the picture plane are determined by where these lines intersect the picture plane.

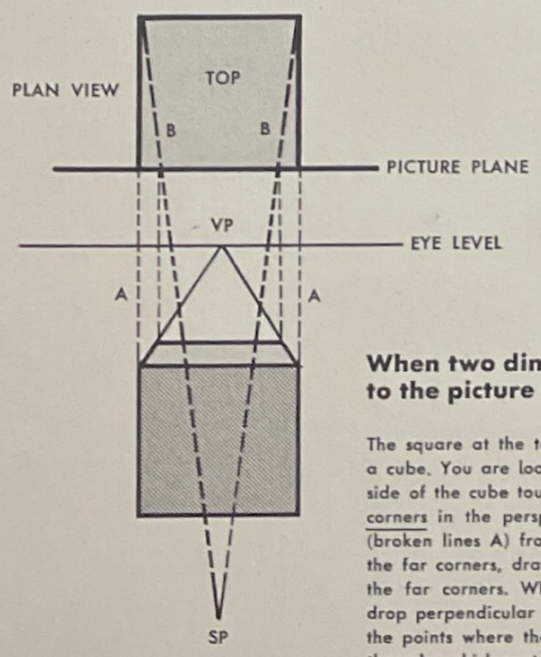


2 To determine the width of each side of the cube, drop vertical lines from the points where the lines from the corners of the square cross the picture plane. We have shown these verticals with broken lines. Then mark off heavy line C, making it the same length as lines A or B. Line C represents the corner of the cube closest to us.

Because the corner of the cube touches the picture plane, line C, which represents the corner in the perspective drawing, will be the same length as it is in the plan or top view. We know that C is the same length as A or B, because in this cube all sides are equal. If we had chosen a box of unequal sides, we would need an elevation view of the box to find the height of the corner, as is shown on page 14.

Next draw in the eye level or horizon line so line C will overlap it. (If we wanted to look down on the cube, we would place the eye level above C, and the reverse if we wanted to look up at it.)

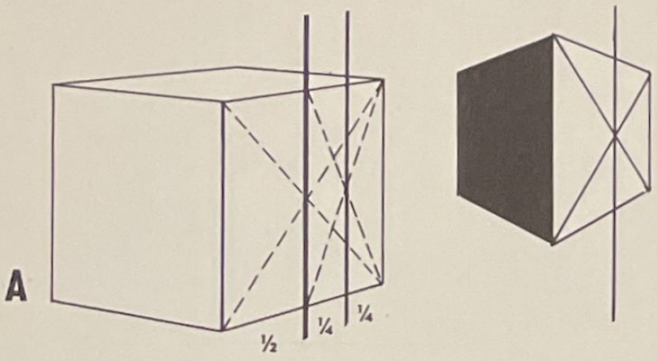
Then draw lines A′ and B′ parallel to A and B, extending them up from the station point until they touch the picture plane. From these two points on the picture plane, drop verticals D and E to the eye level to establish the left and right vanishing points. Finally, draw lines from the top and bottom of line C to each vanishing point.



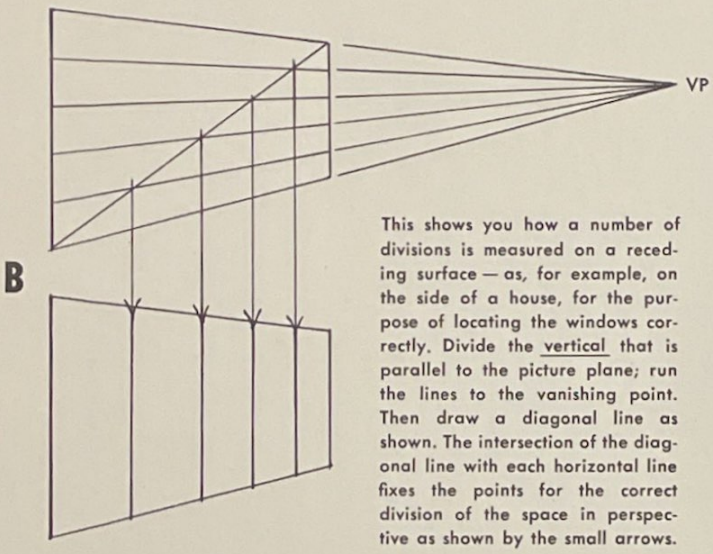
B

When two dimensions are parallel to the picture plane

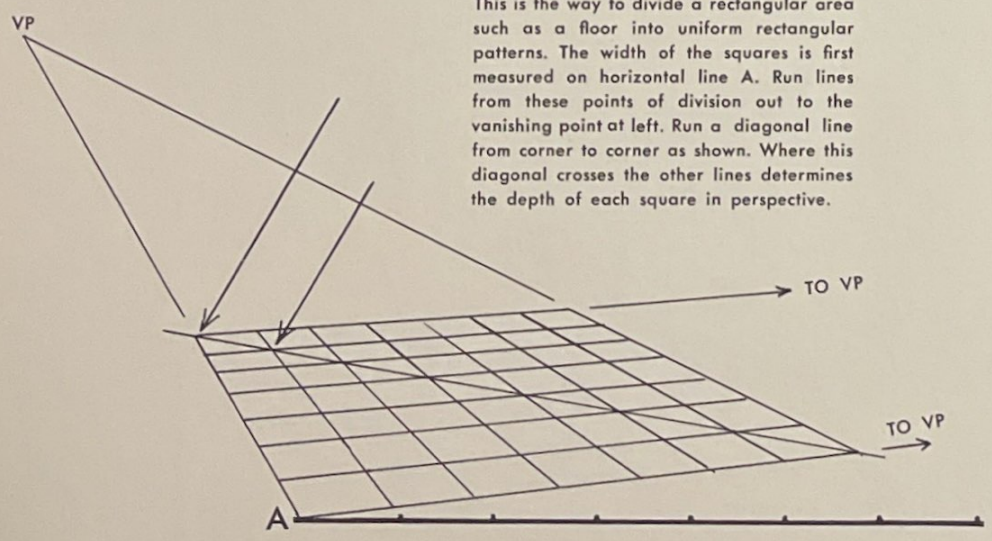
The square at the top of the drawing represents a plan view of a cube. You are looking directly down on top of it. The nearest side of the cube touches the picture plane. To establish the near corners in the perspective drawing, simply drop perpendiculars (broken lines A) from the corners in the plan view. To establish the far corners, draw the two lines (B) from the station point to the far corners. Where these lines intersect the picture plane, drop perpendicular lines. The positions of the far corners are at the points where these perpendiculars intersect the side lines of the cube which go to the vanishing point.



Regardless of the perspective, the above manner of getting the center of a rectangle in perspective is always accurate. Your eye can fool you. We suggest that you use this method. Just draw lines from corner to corner — where these two lines cross is the center. Each area can be divided many times by this method, until you have quarters or eighths or any number of divisions you wish.



This shows you how a number of divisions is measured on a receding surface — as, for example, on the side of a house, for the purpose of locating the windows correctly. Divide the vertical that is parallel to the picture plane; run the lines to the vanishing point. Then draw a diagonal line as shown. The intersection of the diagonal line with each horizontal line fixes the points for the correct division of the space in perspective as shown by the small arrows.



This is the way to divide a rectangular area such as a floor into uniform rectangular patterns. The width of the squares is first measured on horizontal line A. Run lines from these points of division out to the vanishing point at left. Run a diagonal line from corner to corner as shown. Where this diagonal crosses the other lines determines the depth of each square in perspective.

Measurement

In any drawing, proportions must be correct. This is particularly true in drawing objects in perspective. To meet practical problems in artistic perspective, you must be acquainted with methods of measurement. There are different ways to arrive at the same solution. Here we are going to give you a few of the more important ones, which you can apply in various ways.

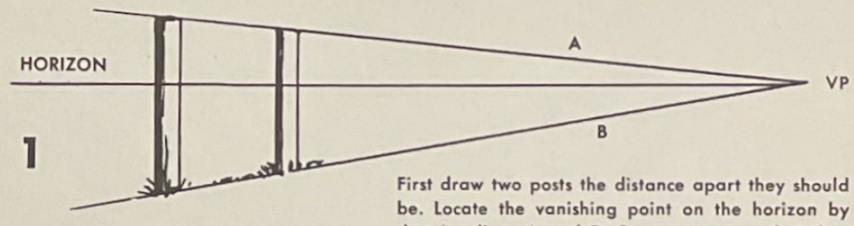
Before making measurements of any kind, be sure to establish the needed vanishing points and the right station point. Get the basic over-all shape established correctly. Otherwise, you will do endless correcting, with the result that the drawing will never seem to come out right.

To divide a rectangle, regardless of perspective, draw diagonal lines from corner to corner, as in Diagram A. Where they cross is the center. This simple rule is invaluable to you and will allow you to work out seemingly impossible problems.

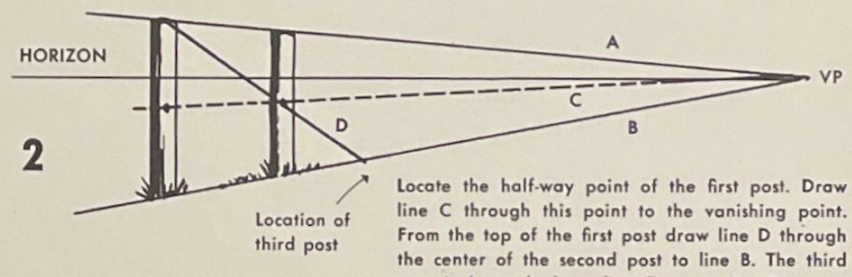
It is often necessary to divide an area or a diagonal into a number of parts, and a ruler will not suffice. The key to most division of space is the vertical or horizontal line parallel to the picture plane. For example, to divide a receding plane into five vertical parts you divide the vertical into five parts with a ruler and the measurement is worked out easily, as in Diagram B.

As you gain experience in drawing forms, your eye soon becomes trained and you will become more accurate in your estimate of measurements. The average artist, of course, makes many of his measurements entirely by eye. However, you will find that the few simple rules we give you here will be useful to you on many occasions.

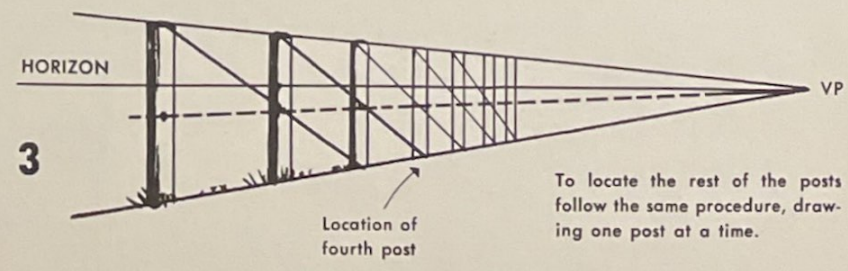
Posts in perspective



First draw two posts the distance apart they should be. Locate the vanishing point on the horizon by drawing lines A and B. Correct posts so that they don't extend above or below these two lines.



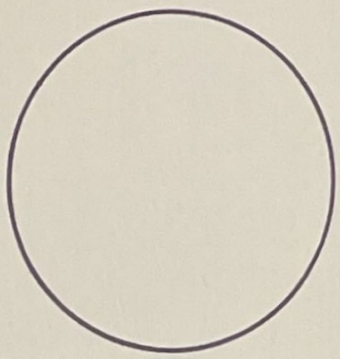
Locate the half-way point of the first post. Draw line C through this point to the vanishing point. From the top of the first post draw line D through the center of the second post to line B. The third post is located where line D meets line B.



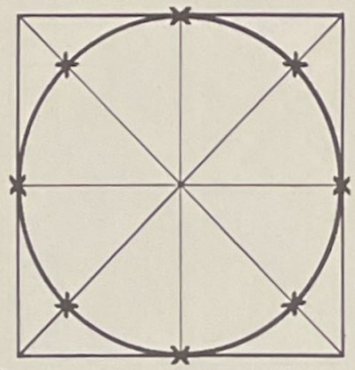
To locate the rest of the posts follow the same procedure, drawing one post at a time.

Lesson **10** Famous Artists Course

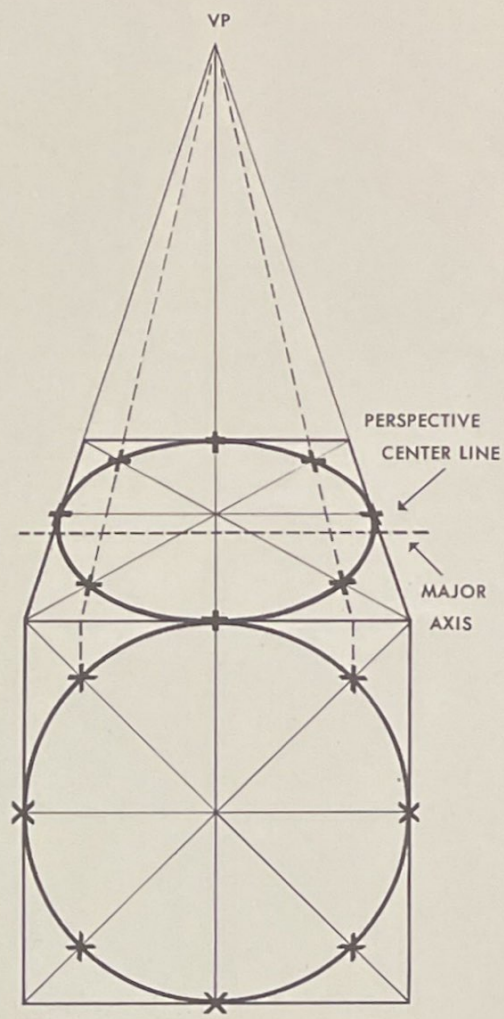
Perspective for the artist



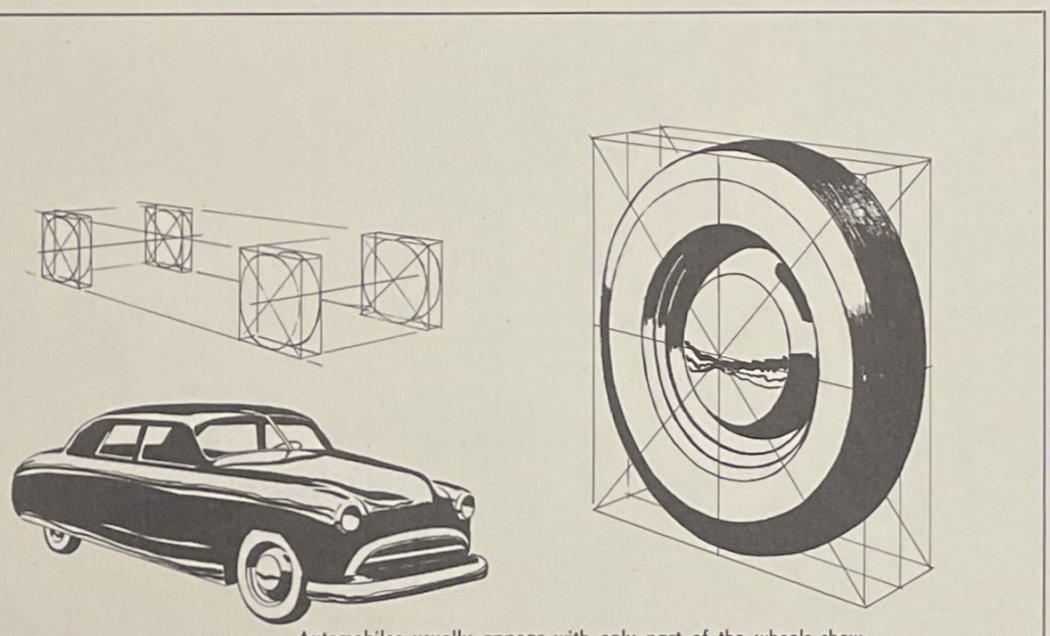
1 A circle appears round only when viewed from a point at right angles to its surface. When seen from any other position it becomes an ellipse. The following diagrams show you how to draw a circle in perspective.



2 The circle fits perfectly within a square. You already know how to draw a square in perspective. Simply add the lines shown in this diagram and you will have eight check points to draw your ellipse through.



3 Next, draw perspective lines back from the top of the square to the vanishing point, to establish the square in perspective. The back edge of this new square may be placed "by eye" or refer to Diagram B, page 8. Then draw the diagonal lines from corner to corner in this perspective square. In the original square, draw short vertical lines from the points at which the circle intersects the diagonals to the top line of this square, as shown. From these two points draw lines back to the vanishing point. Where these lines cross the diagonals of the perspective square you have check points through which you can easily draw your ellipse.



Automobiles usually appear with only part of the wheels showing. The part that does show must be accurate. Draw all of the wheel in first and then cover it with the fender.

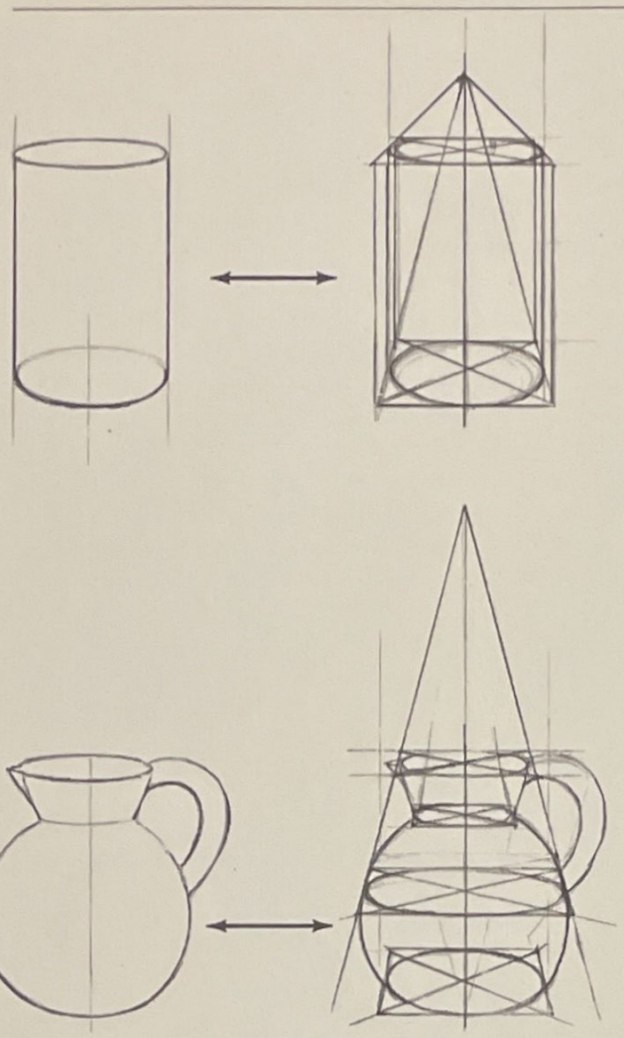
Drawing the circle

The best way to put a circle in perspective is with the aid of a square. Circles, ovals and ellipses are often badly drawn by artists. This is not necessary. By just a few minutes of study you can learn an accurate and simple method based on the square.

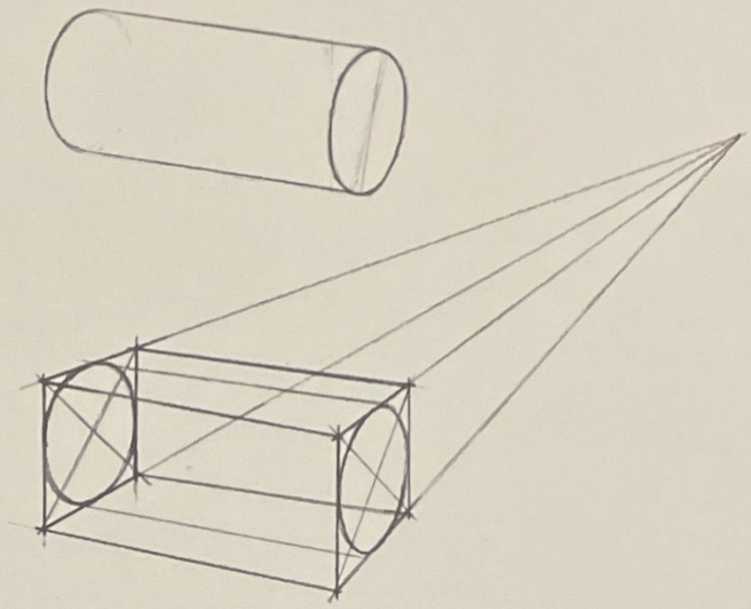
We have shown that the cube is the basis of all rectangular form and that, if you know it thoroughly, most of your perspective problems become simple. The circle is a guide for drawing all two-dimensional curves, ellipses and ovals in perspective. Fortunately, its basis is the square, just one surface of the cube. The reason for using the square is that there is no direct measurement on a curve. Vanishing points are determined from the square, and proportions of curves can easily be seen within it.

The center of the circle shifts from the center of the square when it is put into perspective. It now becomes the perspective center, located at the point where the cross diagonals of the perspective square intersect. A horizontal line drawn through this center does not indicate the widest part of the ellipse. The widest part of the ellipse is the major axis – a horizontal line located exactly halfway between the top and bottom of the ellipse.

When drawing ellipses such as wheels, glass bowls, plates, etc., it is best to rough them in freehand and arrive at the general shape needed. The ellipse may protrude more on one side than the other, for it is difficult to draw a perfect ellipse freehand. The next step should be to relate the square in proper perspective superimposed on the freehand ellipse. When the square is correctly proportioned, cross the center with two diagonal lines and then cross them again with a vertical line through the intersection of the diagonal lines. Draw a horizontal line through the center to determine the perspective center. Use the vanishing point to have the direction of the horizontal line correct.



Build the ellipses into the volume of a rectangular form. Locate the check points of the important curves and draw in the ellipses as shown; then connect the parts.



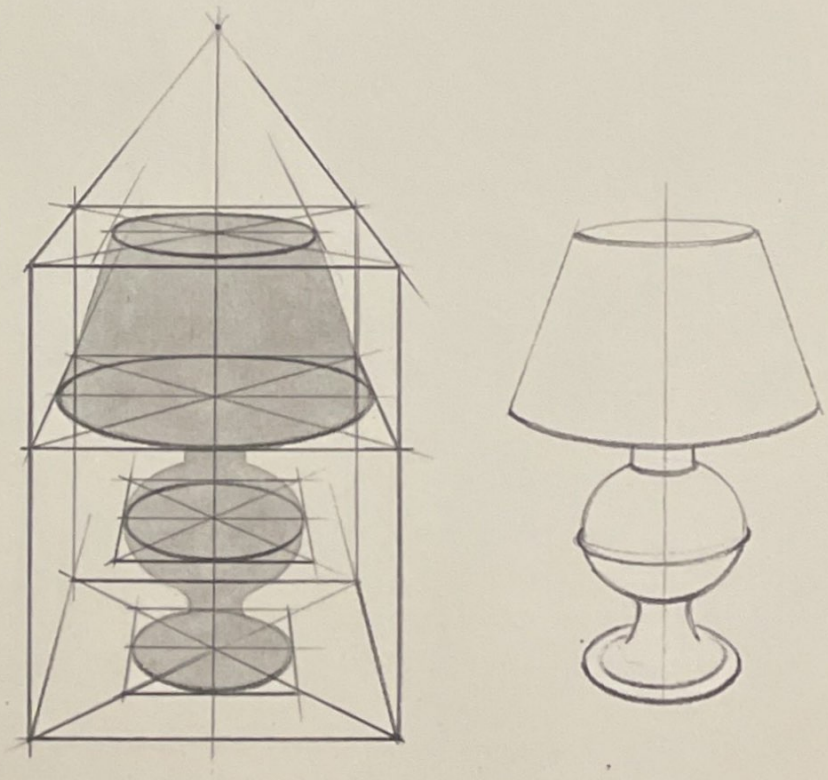
A cylinder can be accurately constructed in the manner shown here. The value of the square, to put each ellipse in its correct perspective, is demonstrated. Drawings like the above can be made freehand but the artist should be very conscious of all the points discussed here.

Constructing curved forms

In perspective, the top ellipse of a water glass is different from the bottom ellipse. Both vary according to the eye level. In a graceful water pitcher you may need to draw several different-sized ellipses to draw the pitcher correctly in perspective. This is done by first drawing the rectangular form that could encompass the curved object. Proceed to divide the surfaces as we showed you on page 10. Make all the divisions necessary by lightly drawing in the diagonals. Use your vanishing points.

When drawing curved forms, the center of the rectangular form is just as important as the center of the square is when plotting the circle in perspective. A study of the diagrams on this page will show you how to proceed. Remember that at eye level an ellipse is a straight line and, as the station point rises or lowers, the ellipse opens until, if you were directly above or below it, it would be a circle.

You learn to draw by drawing



This diagram shows how the curved forms of a lamp are constructed. First consider the over-all form of the lamp as a cube. Next, draw the ellipses, using the method of drawing a circle in perspective shown on page 10.

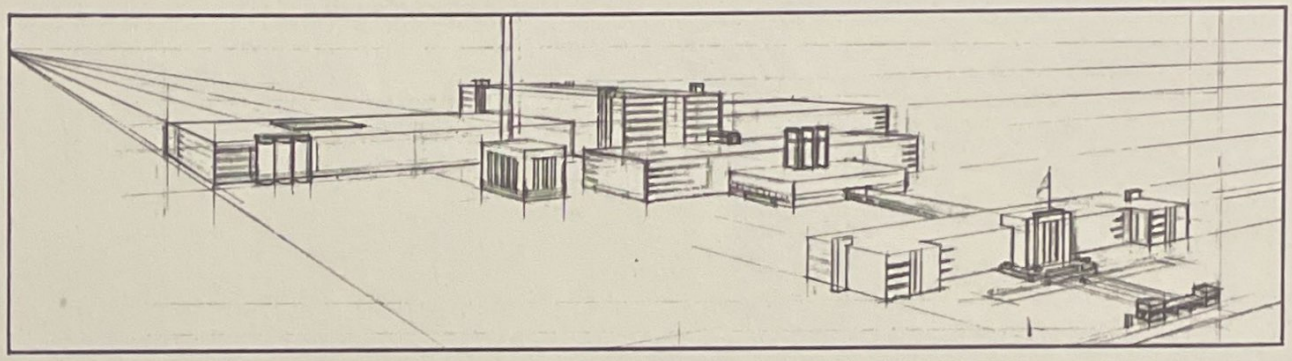
Compound forms

We told you at the beginning of this lesson that if you could understand the cube in perspective you could solve most perspective problems. On this page we are combining different-sized cubes with rectangles, and both, in turn, with ellipses. The three most important things are again: station point, vanishing point and eye level. All of these three can affect the appearance of your drawing if they are poorly selected. However, if they are definitely established, you will still have a drawing correct in perspective although it may be unattractive.

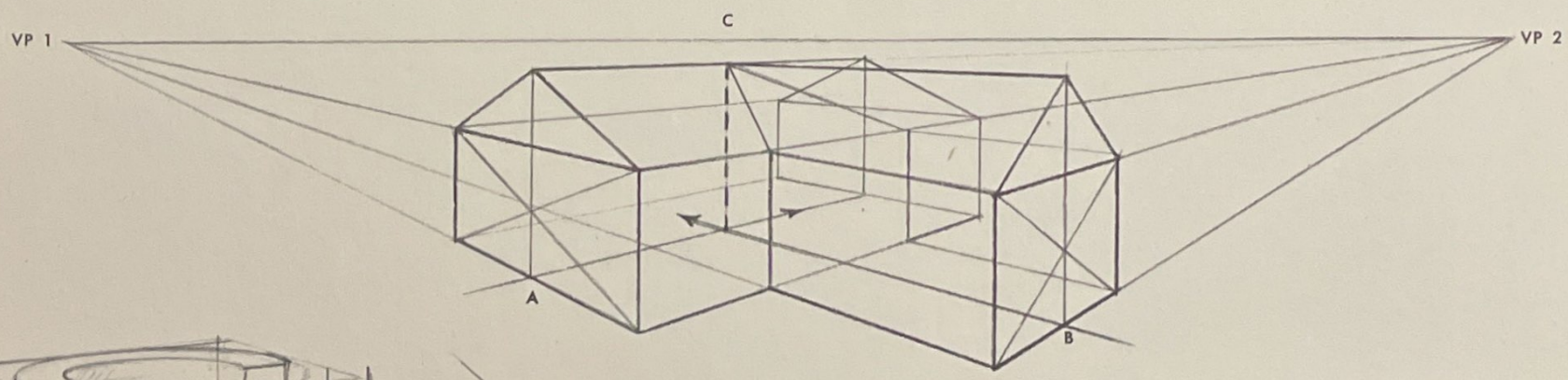
It is important here to remember to keep your vanishing points rather far apart because this will give the final picture a more pleasant appearance. For all general use, we suggest that all verticals be truly vertical, except when a special effect is desired and a third vanishing point is necessary.

Most objects are compound forms. There are millions of forms on earth but only a few basic geometric ones. We cannot diagram them all but we can do a few of the most important. However, if you can draw a cube, you should be able to "slice" it in half. If you understand measurement, you should be able to put some drawers in a cube and call it a chest of drawers. If you need to put a curved vase on it, you should be able to do so by building it from a cube or rectangle as we have shown you. If you were to "construct" a ship, you could lay six cubes together. This would be the basis of the hull – six times longer than it is high and wide. You would find the center of the group, then place the line of the keel and the center of the decks. From here, you would curve the hull and if you use just a bit of care it couldn't get very far out of hand.

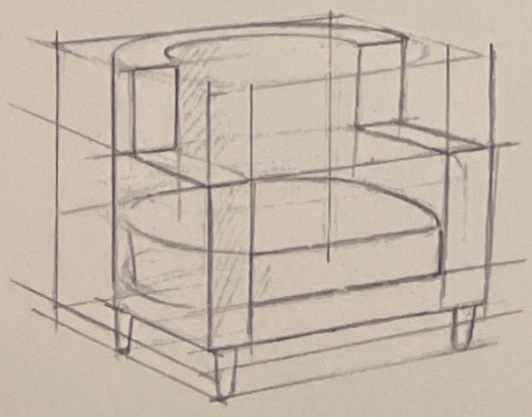
If you know how to find the center of the side of a rectangle, in the way we have suggested with the two diagonal lines, you surely can find a quarter of the area in the same way. For example, if you must find the position of the ridge pole for a roof, you simply draw the vertical line up to the length you wish, through the center, or the quarter position, or any place you might select. We tell you this to show you that compound forms, which you will be constantly confronted with, are not complex – they are only multiples of what you already know. The diagrams on this page should prove this.

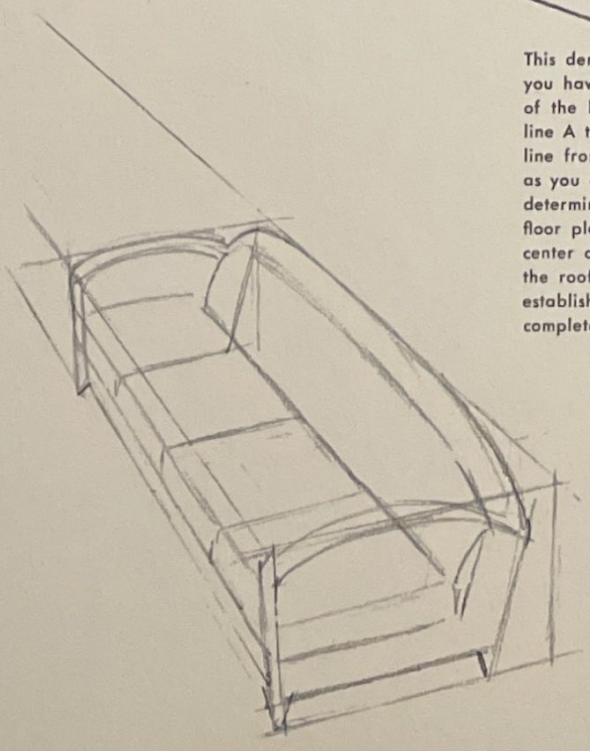


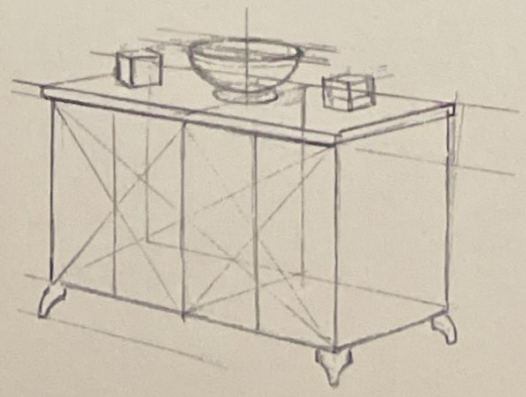
This is a reproduction of the actual preliminary drawing for a factory painting by a member of the Faculty. It is a good example of how perspective is first worked out.

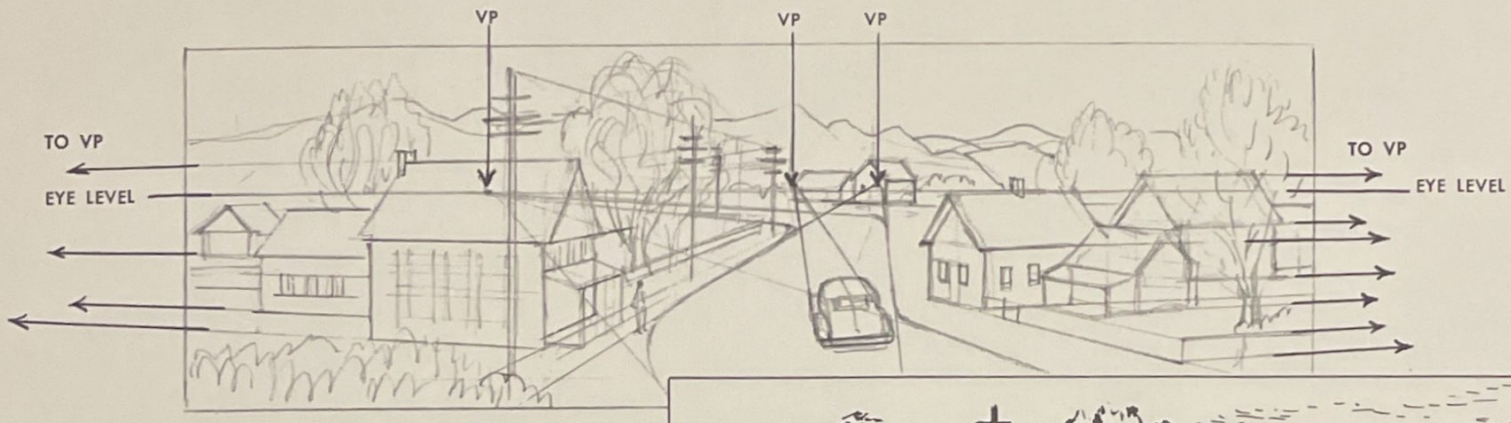


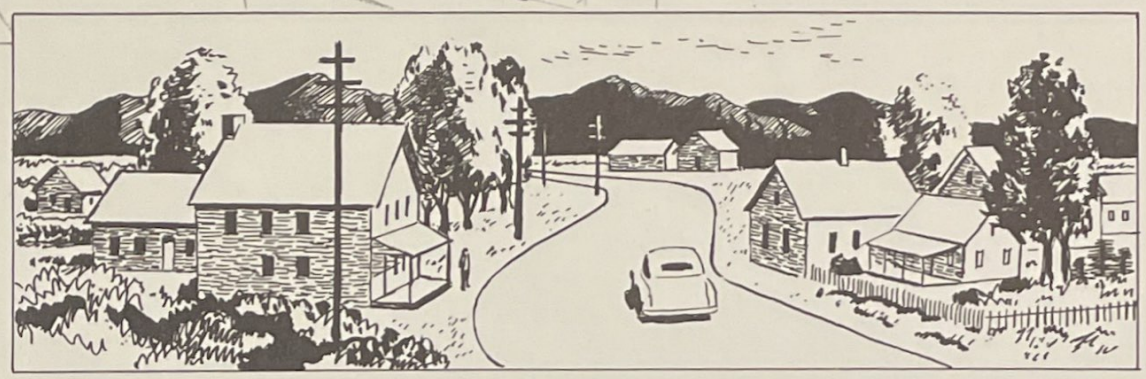
This demonstration shows you how to put a roof on a building like this after you have established the body of the building. First find the center of end A of the building by drawing diagonals from corner to corner. Extend vertical line A through this center to the height you want your roof to be. Then run a line from the top of line A to VP 2. Next, establish the center of end B just as you did for end A and draw vertical line B up through it. You have yet to determine the top end of line B. Draw lines from points A and B across the floor plan to VP 2 and VP 1 respectively. Where these two lines cross in the center of the floor plan, draw a vertical line upward to establish point C on the roof line. From VP 1 extend a line through point C to meet line B. This establishes the peak of end B. Draw diagonal lines down from the peaks to complete the roof ends.











Notice that the road has two different vanishing points caused by a slight jog in its direction. The houses have different vanishing points. The car is "on the turn" and has a different vanishing point. However, all vanishing points are on the eye level.

This interior is just the inside of a cube and the station point is inside the cube. In this case the furniture and the pictures have the same vanishing points as the walls.

Interior and exterior

To put buildings, trees, telephone poles, roads and people "on the ground" in perspective, we follow exactly the same procedure as when we put a cube in perspective. Telephone poles and people do not vary much in height; buildings and trees may vary greatly; roads generally stay about the same width. First establish the horizon or eye level line. From here on, you can put in anything you wish. If there are several buildings, one building can be your measurement for all of the others. The same procedure applies to the trees, the telephone poles or the people. If one is established in the picture, all the other units of the same kind can be readily measured, provided they are parallel to the line of the picture plane.

To place them in depth and at the correct size, you simply run the height of the objects to the vanishing point. At any level in the picture you can shift the objects horizontally. Be sure the horizontal shift is absolutely parallel to the picture plane. Buildings may be in various positions – not at right angles or parallel to each other. Establish the view of the building freehand and then establish the vanishing point for that building. Each building can have its individual vanishing points, but these must be on the established eye level.

For interior perspective, try to think of a room as being the inside of a cube. All of the rules established with the cube are applicable here. You are inside the cube instead of outside it. There must be an eye level and vanishing points. Furniture can, with care, be arranged in various positions, provided you have an eye level established so that you can shift the vanishing points for each individual shift of furniture position.

When doorways, pictures, curtains, mouldings, etc., follow the wall, the vanishing points of the wall are used. Floor patterns follow the perspective of the floor and you must hold to the vanishing points you have established for the floor. A center lighting fixture is placed at the intersection of the diagonal lines running from corner to corner in the ceiling.

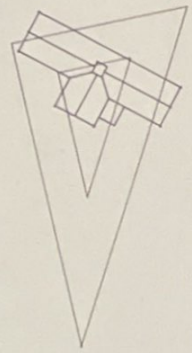
How to make a perspective drawing from a plan and elevation view

First draw horizontal line A to represent the picture plane. Arrange the plan behind this line, as at the right, so the parts you want to show in the perspective drawing face line A. Trace down the plan with the nearest corner of the building just touching line A, the picture plane. Then trace down the elevation view of the building to the left of the area where you want to make the perspective drawing.

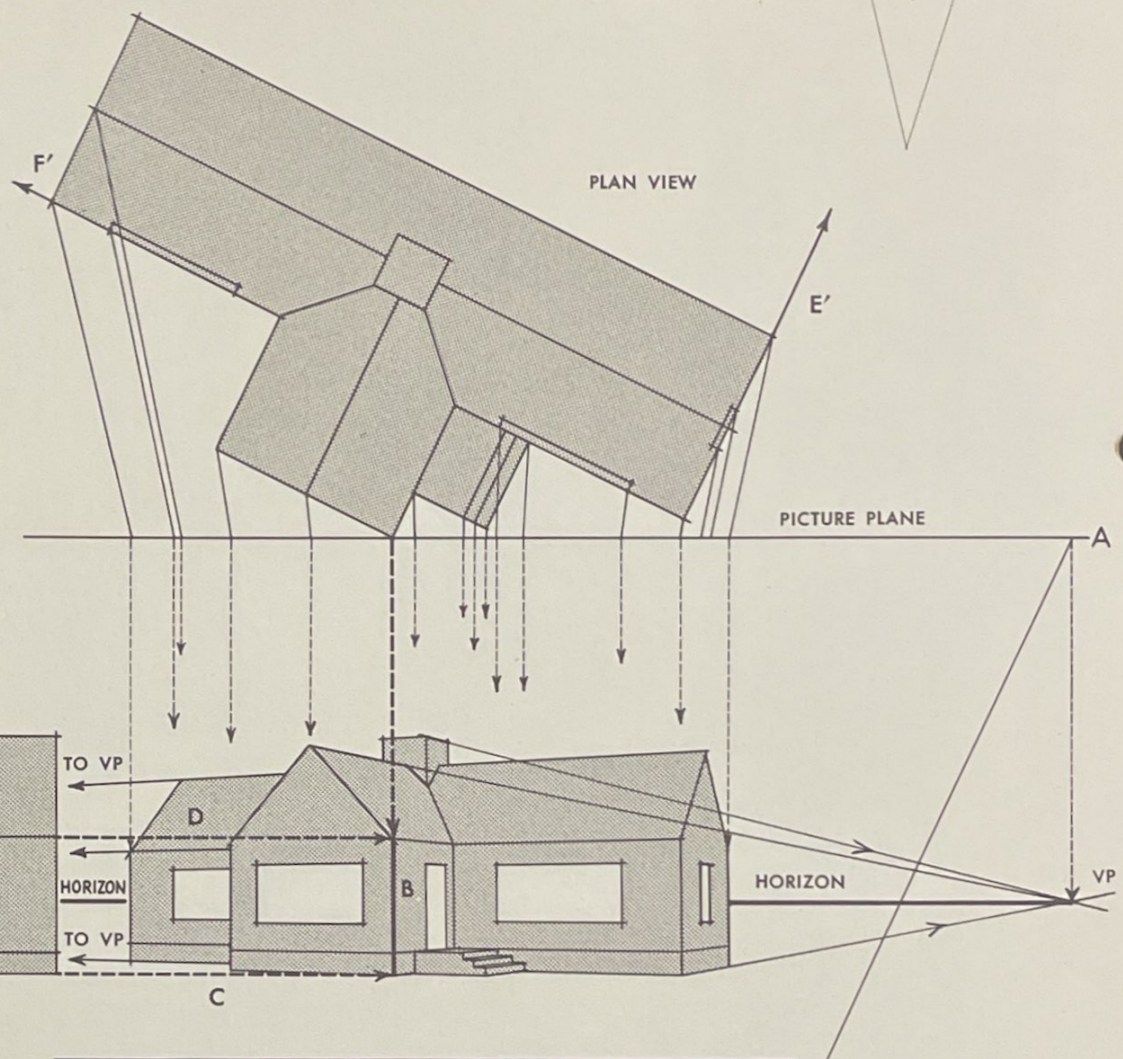
Next, select a station point. In general you will find it best to place this point below the approximate center of the plan. A handy rule of thumb is to cover the width of your plan with the broad part of a 30° – 60° right triangle as shown in the small diagram at the far right. (A 30° angle represents just about the scope of human vision. When the angle is greater than 30°, distortion results.) Place your station point at the lower point of the triangle.

Then draw lines from the station point to the corners of the roof, porch, chimney, windows and other parts of the plan that you want to locate in your perspective drawing. It is not necessary to draw these lines below the picture plane. The lower portions of these lines are drawn in here merely to make the procedure clear.

Where these lines cut across the picture plane, drop parallel vertical lines to establish accurately the widths of the building



Place a 30° — 60° right triangle over the plan. Then use the lower point of the triangle for the station point.

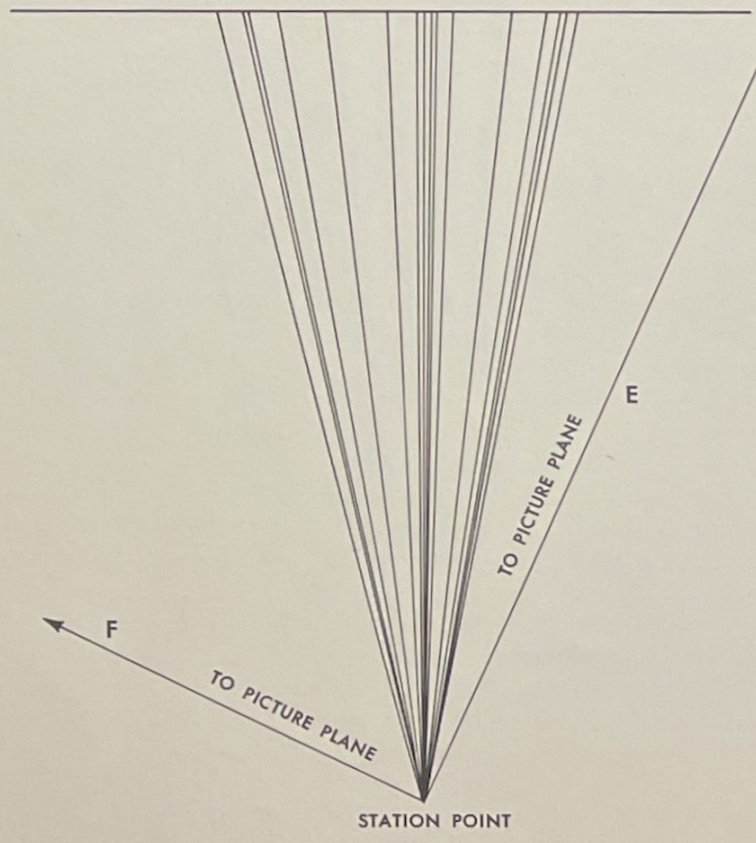


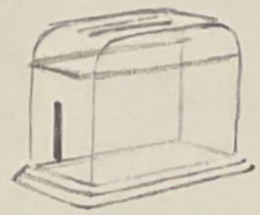
and all of its parts such as doors, windows, porch, chimney and roof peaks. These are the broken lines in the diagram. We have brought down only a few of these lines (sides of the buildings, peak of the roof, and nearest wall) to avoid confusion in the diagram. You should draw all of them right down to a line level with the bottom of the house in the elevation view.

The most important of these lines is line B, which represents the corner of the building closest to us and which touches the picture plane. This is the only line in the perspective drawing not foreshortened by perspective and is therefore the only one we can use for vertical measurements taken directly from the elevation view.

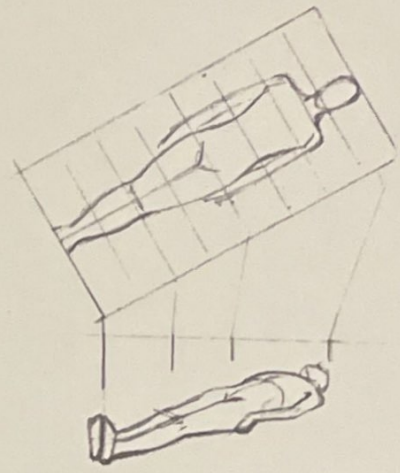
Next decide on the eye level or horizon line. We have placed the horizon line approximately halfway between broken lines C and D. From the station point draw line E parallel to E′ in the plan, and line F parallel to F′. Where lines E and F cross the picture plane, drop vertical lines to intersect the horizon. These locate the vanishing points.

The rest of the process is simple. Just carry across vertical measurements from the elevation view to line B, and from these points on line B draw construction lines to the vanishing points, using the regular procedure described on the preceding pages. The vertical lines dropped from the picture plane will automatically establish the width of the walls, windows, doors, chimney, porch, etc., in the perspective drawing. The most important thing to remember is that you can make direct vertical measurements only on line B in the perspective drawing when you carry these measurements across from the elevation view.

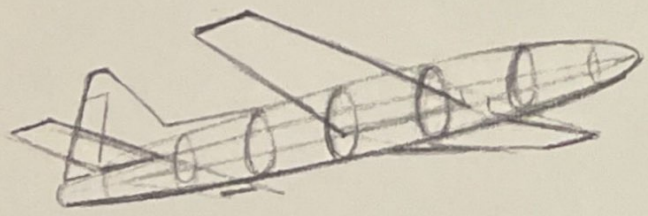


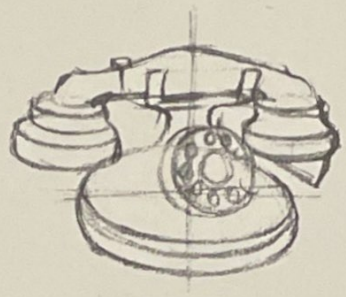


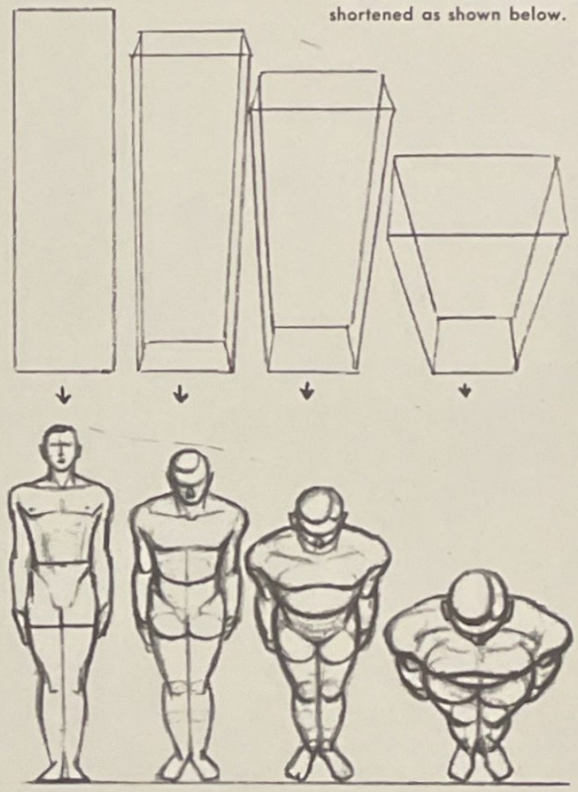
On this page are examples of the way to draw "free" or irregular forms. "Draw through" them and think of the perspective while you are drawing. Measure the parts. First you must reduce the object to its basic form — you can add the details later. Remember a form has depth and perspective.

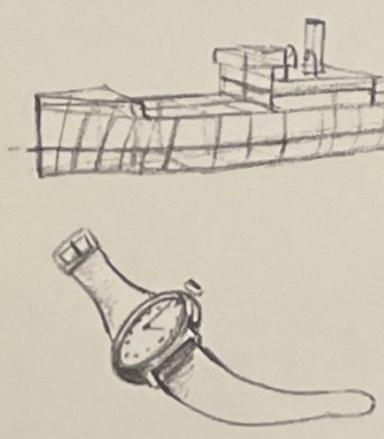


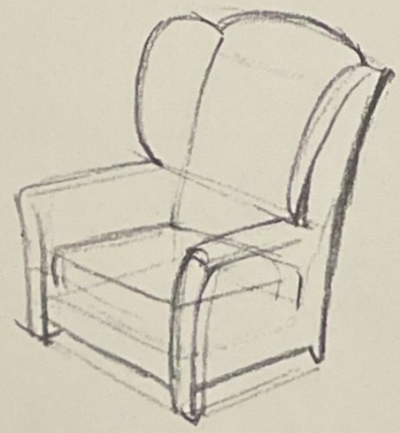
A figure can be measured and foreshortened as shown above, or it can be foreshortened as shown below.









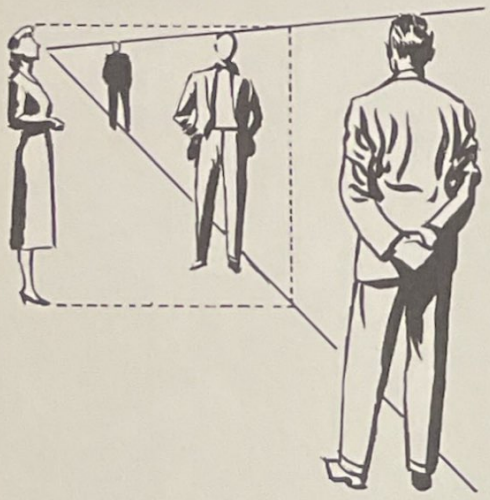


Foreshortening and "free" forms

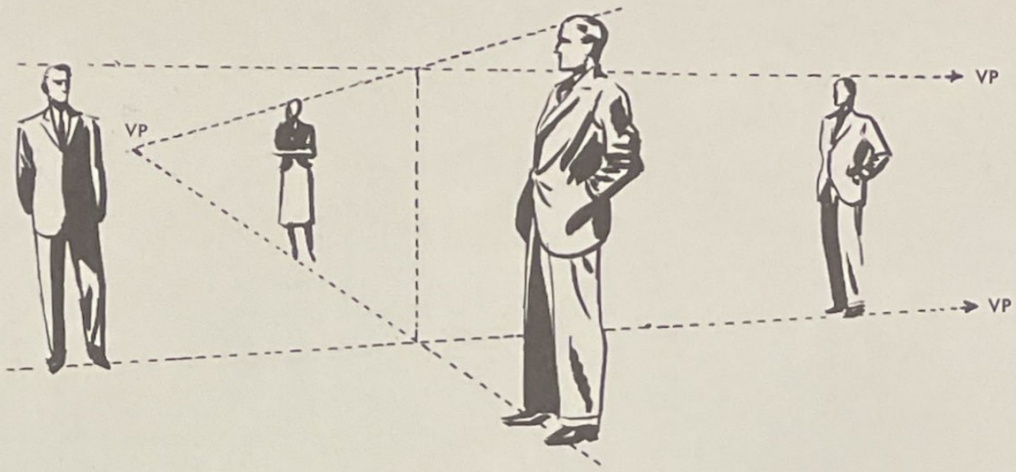
In a picture, a leg receding from you or an arm coming toward you is foreshortened — it is in perspective. Unlike a geometric form or an ellipse, it is a "free" or irregular form. Within the cylindrically shaped limb are many curves. They make foreshortening more difficult. Knowledge and a great deal of practice in drawing the figure in various positions are your best aids. However, thinking in terms of perspective will help you too.

The methods of measurement we have applied to geometric forms can be used many times to advantage here. For example, the approximate knee position on an extended leg can be determined in the same way that you can determine the position of a door or a window on a receding surface. Most artists acquire, through practice, the ability to do this freehand, but there are times when, in an unusually acute perspective, some way of checking is needed. How much or how little is seen of the head of a figure lying diagonally, feet first, on the floor, can be a very important point to clarify.

In unusual views, it is helpful to fit the figure into a rectangular form. This can quickly determine if and where a part will be seen and its approximate shape. In doing this, use only the basic form. Although you may not draw the many perspective lines, you must have the approximate form and its perspective in mind. If you get into trouble, perspective is the cure. Go back to the three basic needs: station point, eye level and vanishing point. In drawing the figure and most small objects, be sure the station point is not too close to the object. If it is, you will find too much distortion. Do not have a foreshortened arm as long as a city street. Remember that drawing is thinking.



The simple way to be sure the people are placed in their correct size and position is to establish an eye level and a vanishing point. To place a certain-size figure to one side, run out the lines of height horizontally to the desired position.



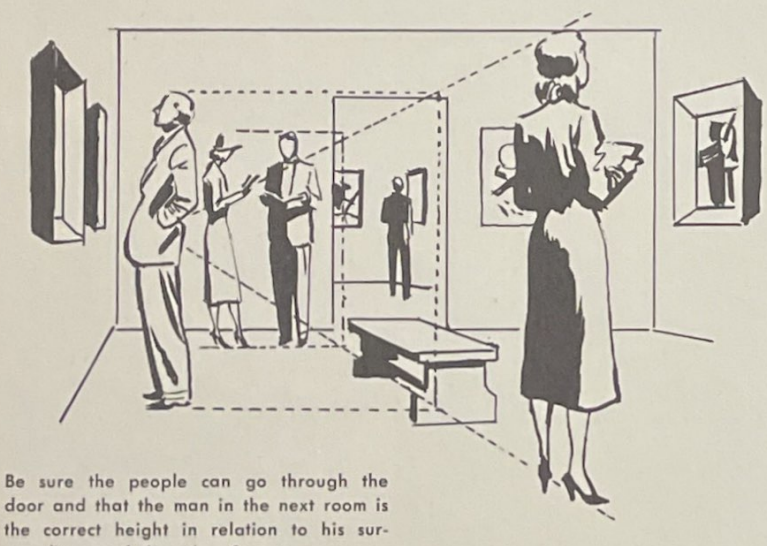
When the figures are not parallel to the picture plane, two vanishing points should be used.

The figure in perspective

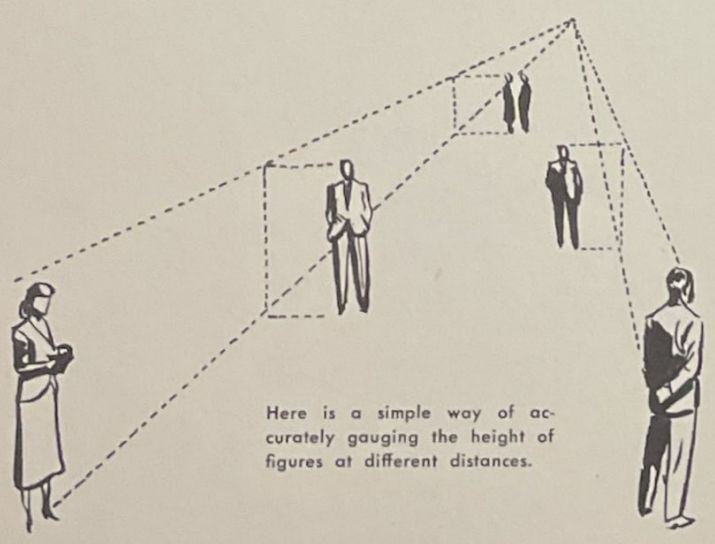
There is probably nothing more exasperating, in a picture, than a figure that is not standing on the floor or one that is taller than the door. To place the figure in its correct position is imperative. Furthermore, the figure is the artist's yardstick. People are an approximate height. Anyone viewing a picture automatically determines proportions, scale and sizes as they relate to the figure. A tree's height is gauged by the figure standing next to it; a building is large or small as it relates to the person entering it. Everything in a picture is relative. The figure and its position in perspective are the yardstick.

Again it is the vanishing point that does it. The vertical distance between the guide lines which go to the vanishing point establishes the height of a figure anywhere in depth. To move the figure to the left or right of these guide lines, simply extend horizontal lines from the head and feet. If you determine the height of one figure, the correct height of all the others is established by the two horizontal lines crossing the lines that lead from the figure to the vanishing point.

After some practice and experience this becomes second nature to you. Few artists continue to use this process. There are times when you may need it and it is well to know. It's a means of checking, however, and not a must. Study the diagrams and you will quickly understand what we mean.

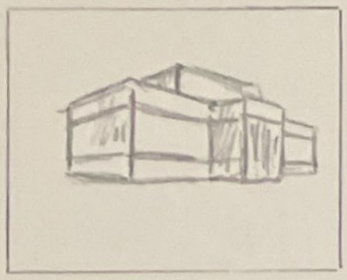


Be sure the people can go through the door and that the man in the next room is the correct height in relation to his surroundings and the other figures.

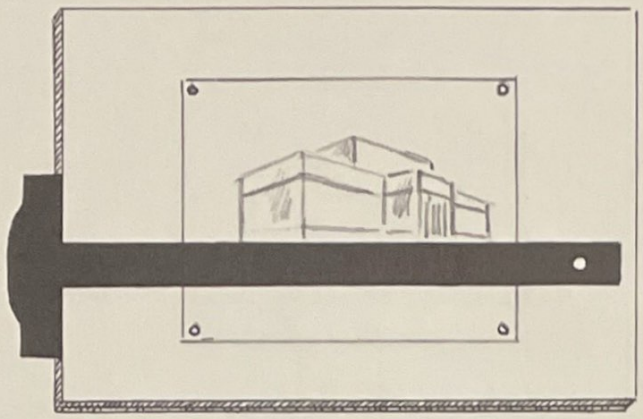


Here is a simple way of accurately gauging the height of figures at different distances.

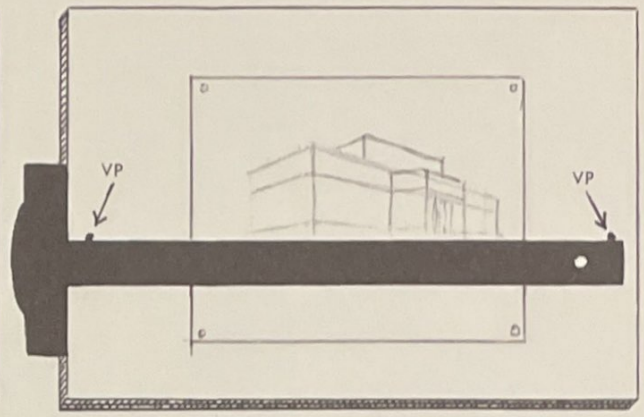
When drawing seated and standing figures together, take care to ascertain the sizes. For example, two sitting figures can be different heights, depending on their sitting posture.



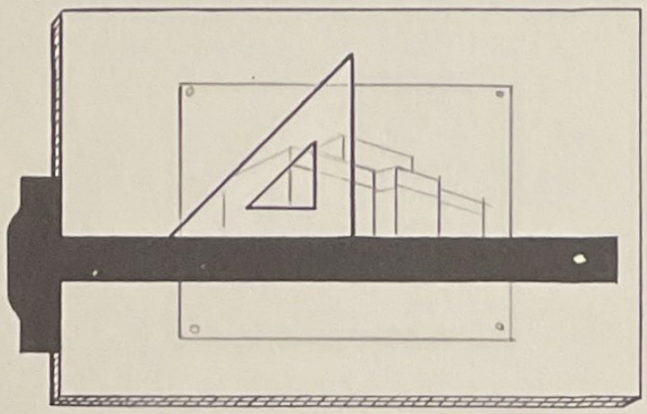
Make a rough sketch.



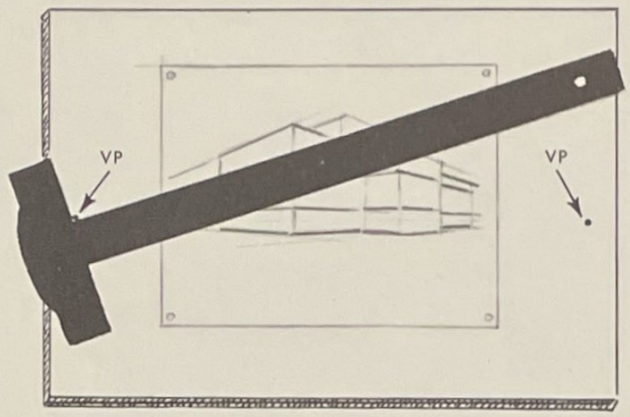
Tack down the sketch and draw the eye level line.



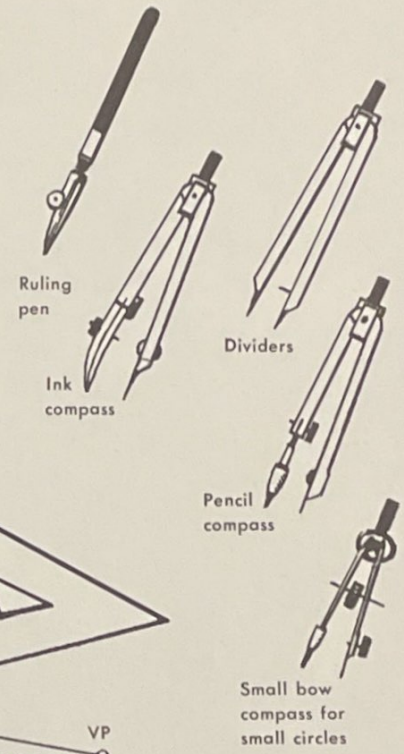
Establish the position of the vanishing points.

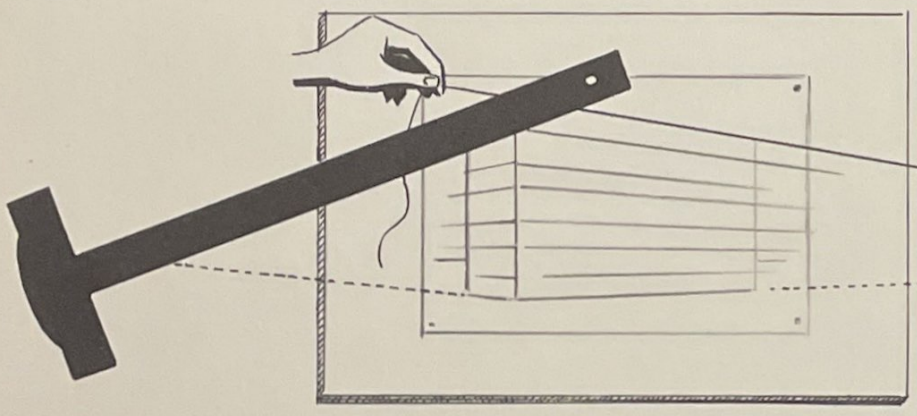


Use the triangle at right angles to the T-square to make vertical lines.

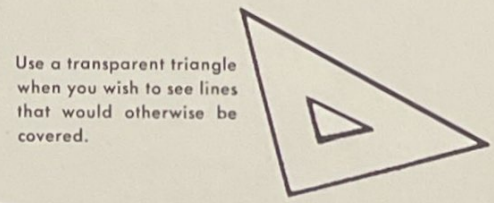


Pivot the T-square from each vanishing point for all diagonal lines.





When vanishing points are off the board, use a piece of string and a thumbtack to establish each one. Then lightly rule in some intervening lines like those shown here and use them as a guide to establish any others you may need.



Use a transparent triangle when you wish to see lines that would otherwise be covered.

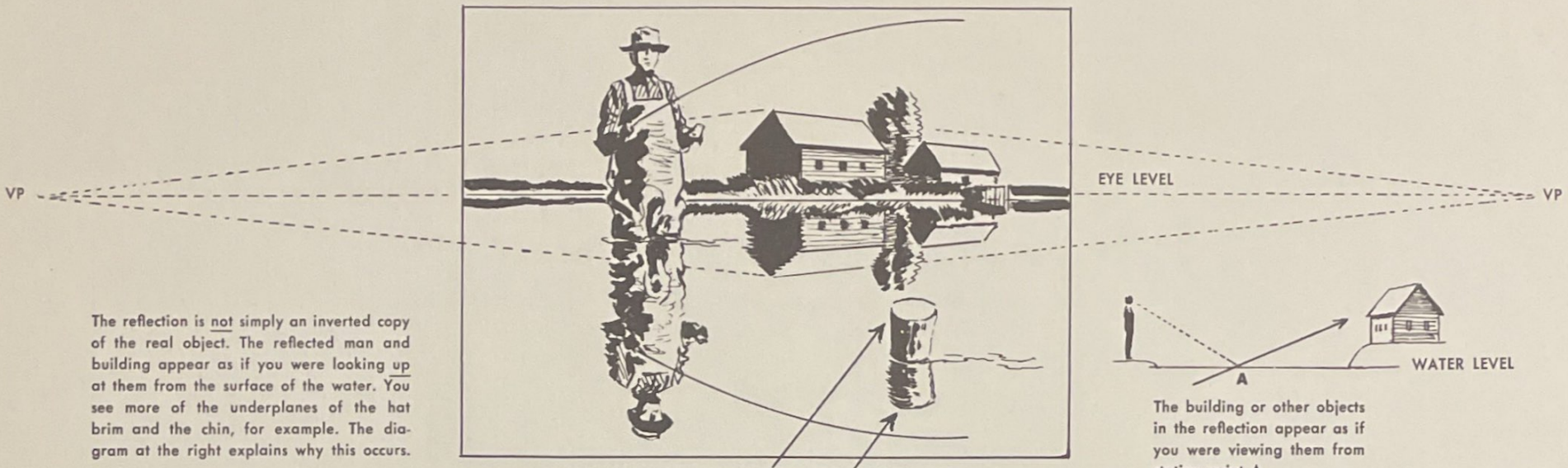
Method of procedure

For practical working conditions there are numerous short cuts — too many to list here. Artists, through practice, discover many to suit their needs. For the professional artist these short cuts save time and labor. Generally, drawings are a combination of freehand and instrument drawing. For most purposes, a drawing board, T-square, triangle and compass are all you need.

Rough in your drawing freehand to get the view you wish. Then establish the eye level and estimate the position of the vanishing points. If one is further away than the other, shift the position of your drawing on the board to accommodate the difference. Line up the eye level horizontally with the T-square and firmly tack down the paper. To correct any error in your rough sketch, you may need to shift your vanishing points along the horizontal eye level. When the vanishing points are correctly established, put a tack or pin firmly at each point. Turn the T-square upside down and let it pivot from the tack. This is the simplest way to draw your perspective lines. For vertical lines, hold the T-square horizontally across the paper and use a triangle.

If the vanishing points are wide apart (as they should be in most cases) and are beyond the edge of your board, a good method to use is one of measurement. Proceed with the rough sketch and then approximate the center and two end verticals. Establish the eye level and also the major horizontal perspective lines. Although the vanishing points may be four feet away, be sure they are both on the eye level. You may need to use a long piece of string to establish them. Then draw several guide lines and proceed as shown in the bottom diagram.

To obtain a flat edge, use your T-square upside down, pivoting from a tack placed at the vanishing point. Use your T-square from the side of your board for all horizontal lines.



The reflection is not simply an inverted copy of the real object. The reflected man and building appear as if you were looking up at them from the surface of the water. You see more of the underplanes of the hat brim and the chin, for example. The diagram at the right explains why this occurs.

You see the top of the stump. In the reflection, the top cannot be seen because the view is from below.

The building or other objects in the reflection appear as if you were viewing them from station point A.

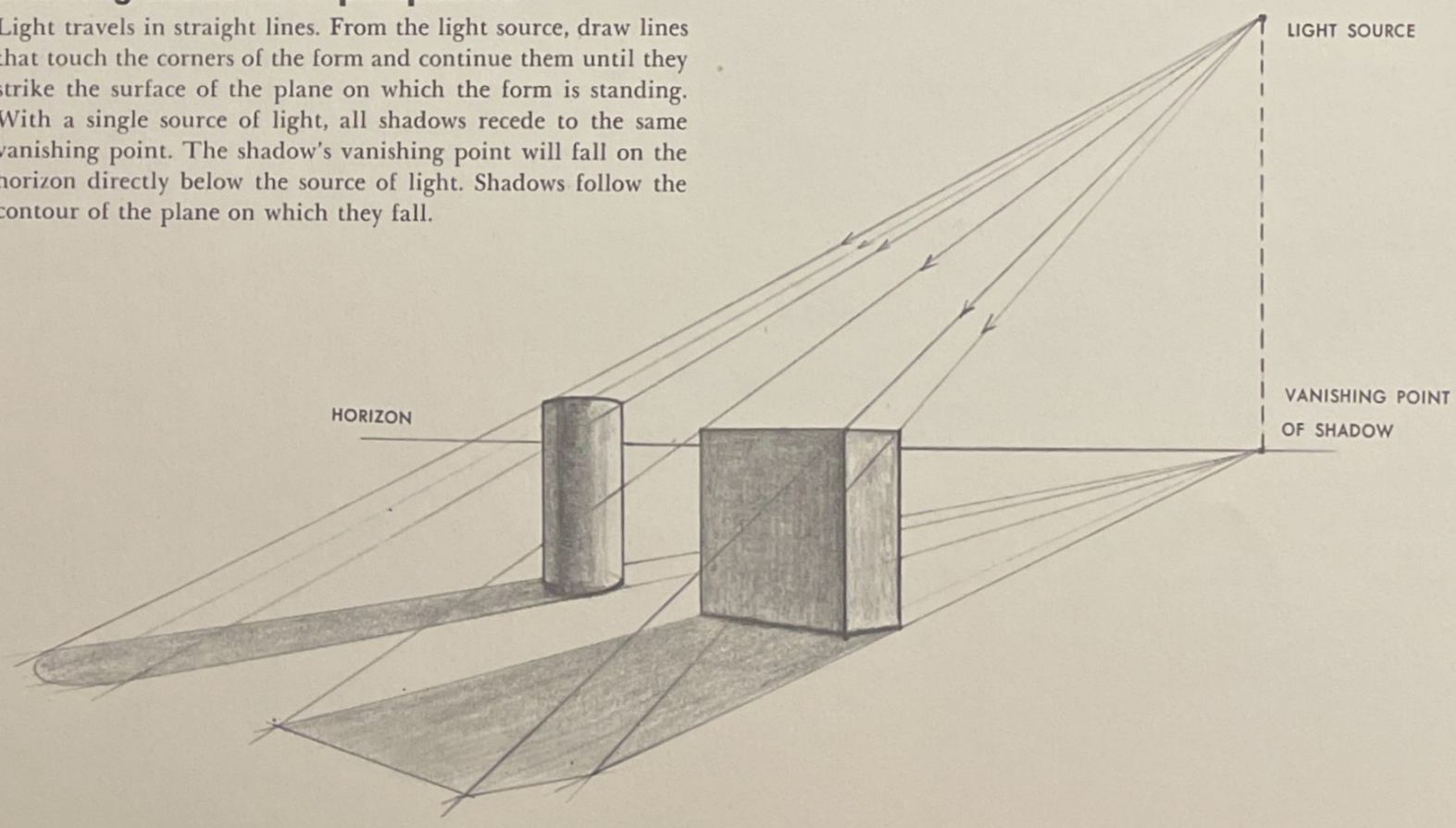
Reflection

An object reflects in the water or in a mirror as far as it projects above. It is not the reverse of the drawing above. The eye level remains constant but the view is a reflected one. For example, the station point is the same but the eye looks down and sees what the "water sees" looking up. Another explanation is this: If the eye level is above an object, you are looking down at the object. As this object reverses in reflection, the proportions remain the same but the "view is up" or from below it. If the object is close to the eye level, the reflection will be nearly a duplicate in reverse, but not if the object is well below eye level.

Study the drawing above and establish in your mind the perspective of the foreground stump and figure. Then turn the drawing upside down and notice the difference in the "view" or, better still, trace the figure, reverse it and compare it with the reflected figure in the drawing. This will show you exactly how this figure is distorted in reflection.

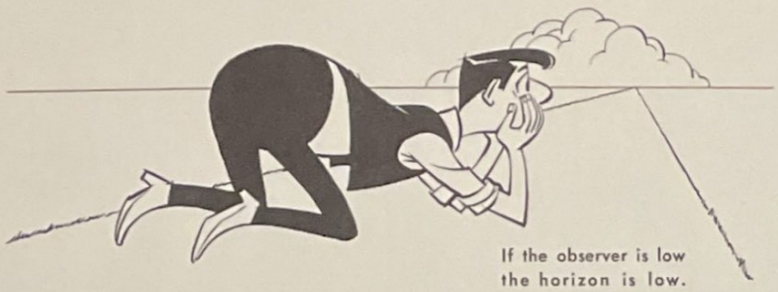
Drawing shadows in perspective

Light travels in straight lines. From the light source, draw lines that touch the corners of the form and continue them until they strike the surface of the plane on which the form is standing. With a single source of light, all shadows recede to the same vanishing point. The shadow's vanishing point will fall on the horizon directly below the source of light. Shadows follow the contour of the plane on which they fall.



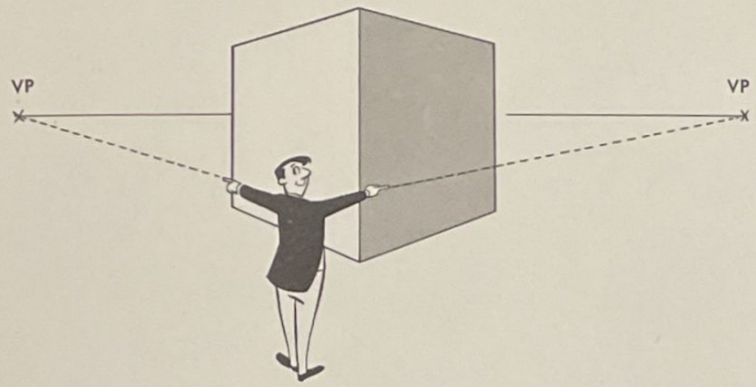
Things to remember

The horizon is always at the eye level of the observer.

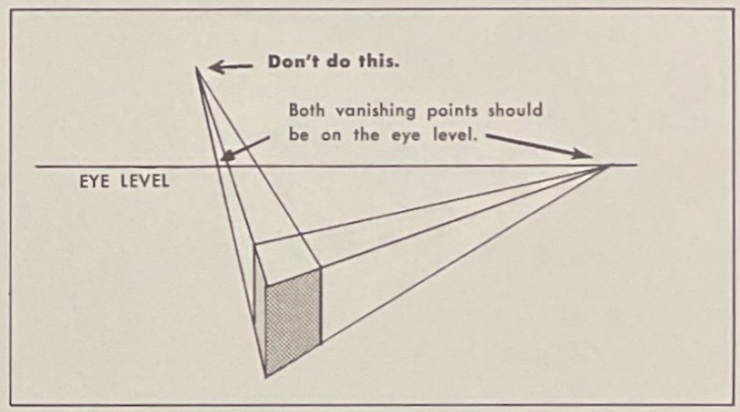


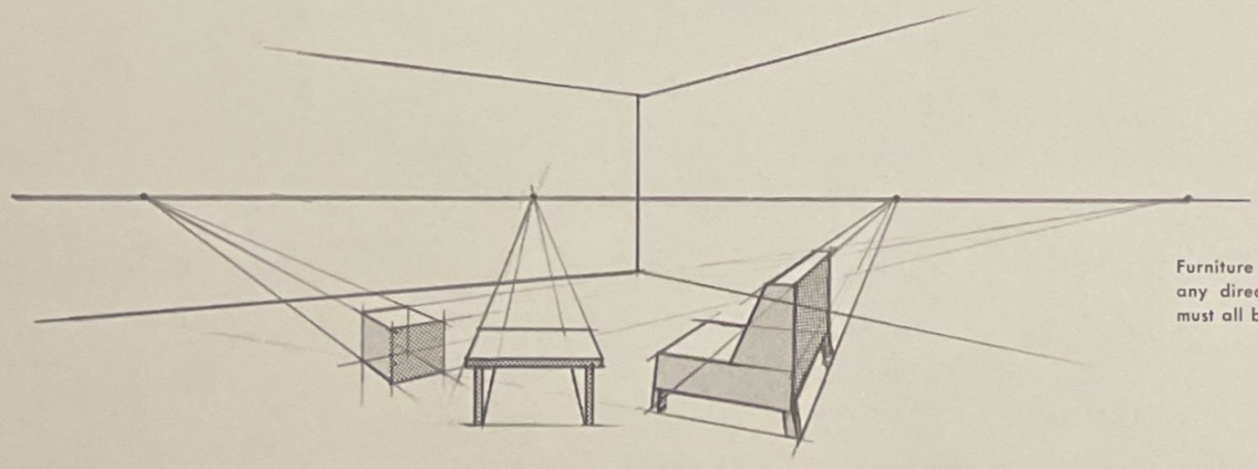
If the observer is low
the horizon is low.

If the observer is high
the horizon is high.



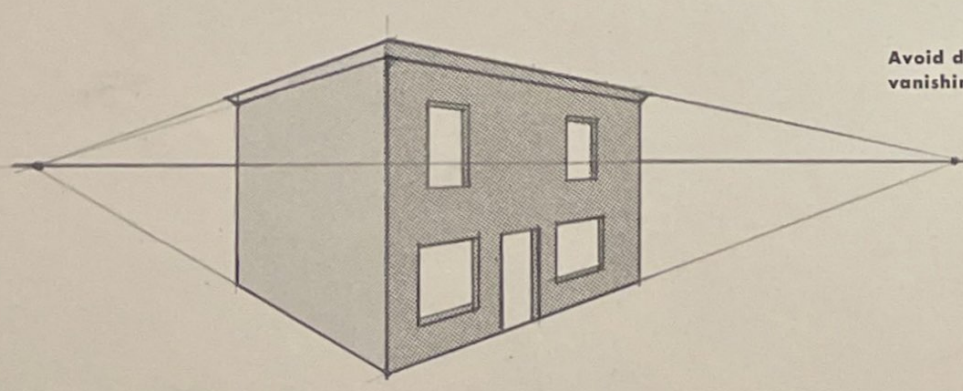
Imagine that you are standing in front of a cube. With arms extended parallel to the sides of the cube, point toward the horizon. This will give you a good estimate of the position of the vanishing points.



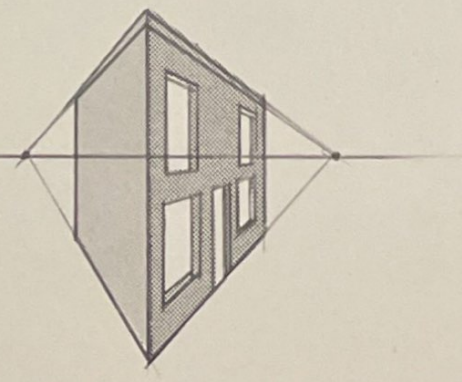


Furniture in a room can be facing any direction, but vanishing points must all be on the same eye level.

Avoid distorted perspective. Keep vanishing points well apart.



Correct: Vanishing points placed far enough apart.



Incorrect: Distortion too great because vanishing points are too close.

Attitudes towards perspective

A sound knowledge of perspective is a valuable tool for the artist. It is not, however, an artistic end in itself. The proper goal of picture making is a good picture, and this may or may not require accurate perspective. As the examples below demonstrate, different artists will take a different approach toward perspective – depending upon their style and the purpose for which the picture is made.

Courtesy New York Central

Austin Briggs

Courtesy Esquire

Ben Shahn

In both of these pictures, people seen against a background were the artists' subject — but one artist was making an advertising illustration, the other a picture strong in atmosphere and feeling. Each artist interpreted the perspective to suit the needs of his picture. Austin Briggs' drawing shows how a realistic treatment of foreshortening and perspective creates a believable illustration. By contrast, Ben Shahn was mainly concerned with design and the expression of a very personal reaction. He sacrificed perspective in favor of the strong pattern created by the building stones, windows, and flat figure.

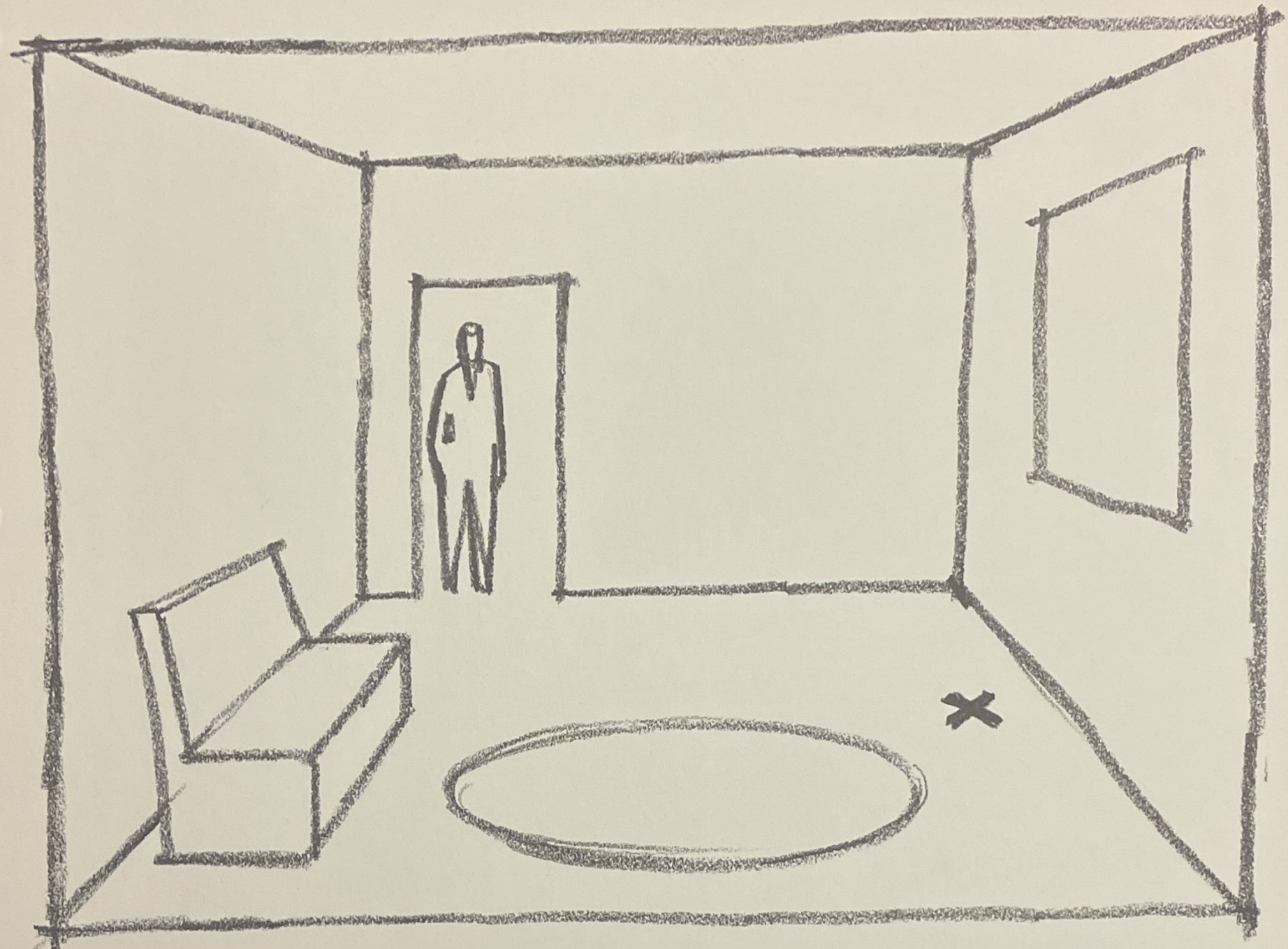
Courtesy Standard Oil Company

Doris Lee

These two examples again show how similar subjects can be treated with different perspective emphasis. Although Doris Lee used perspective to a limited degree — notice how the road narrows and the forms diminish as they recede — her main purpose was not to create depth, but an effective picture design. Where the perspective interfered with this it was arbitrarily altered — note the flat treatment of the road behind the man. In Peter Helck's painting, realism is well established by the careful use of accurate perspective, which helps create a strong sense of realism throughout the whole picture.

Courtesy Alcoa

Peter Helck



FAMOUS ARTISTS COURSE
Student work
Lesson 10
Perspective for the artist

HOW TO PRACTICE AND PREPARE FOR THIS LESSON

In this lesson we show you how to use the fundamentals of perspective to make better pictures. We are not concerned with the complicated details of perspective required to make architectural or engineering drawings, but with the simpler, basic kind of perspective that every artist needs to know. With this in mind, here are some things to do for study and practice:

1. Read through this lesson carefully until you thoroughly understand the basic principles of perspective. You'll find it helpful to review pages 18 through 23 of Lesson 2 at this time. Then apply what you have learned to the following exercises.

2. Select several photographs of the interiors or exteriors of buildings. You can find many examples in magazines. Place each picture beneath a sheet of tracing paper. Locate the vanishing point or points on the horizon line by extending the lines of the interior or exterior walls of the buildings. Complete the diagram by drawing in the other main lines of perspective.

3. On your tracing pad, make many sketches of objects such as chairs, tables, windows, household appliances, dishes, etc. These can be rough, but should be reasonably accurate in terms of form and proportion. Then place a clean tracing sheet on top of each sketch and make a careful perspective drawing.

4. Make drawings of some of the rooms in your house, using the principles described on page 13. Draw the furniture, doors and windows following these same principles. Place figures at various points in the room, applying the method shown on page 16.

THE ASSIGNMENTS YOU ARE TO SEND IN FOR CRITICISM

ASSIGNMENT 1. Make an accurate one-point perspective drawing from the rough sketch on Plate 1. Put a sheet of visualizing paper directly over the rough sketch and make your drawing the same size and in the same position on the sheet. This will allow room for the circle you draw to construct the ellipse of the rug. (See diagram on page 10.) Consider the nearest wall of the room to be the picture plane. Place the horizon about $\frac{1}{4}$ inch above the top of the doorway. Be sure to indicate this eye level and the vanishing point. Show all construction lines.

Divide the window on the right wall into nine panes of the same size. Draw the sofa against the left wall and draw the circular rug on the floor in approximately the position indicated. Place the center of the rug directly below the vanishing point. Locate the position of a simple square lighting fixture at the center of the ceiling. In the position marked X on the floor, draw a standing figure which relates correctly to the figure in the doorway. Both figures are 6 feet tall.

Before doing this drawing, restudy the diagrams on pages 6, 9, 10 and 16. Make your drawing with an H or 2H pencil in line only, on a sheet of visualizing paper 11 inches wide by 14 inches high.

Mark this drawing -- ASSIGNMENT 1.

ASSIGNMENT 2. Make a two-point perspective drawing in pencil of the one-story house shown on page 12. Construct this house so that the eye level is located about one-third of the distance down from the eaves of the roof to the ground. Draw a large window centered on the wall above A.

Draw the house about 4 inches high on a sheet of visualizing paper measuring 14 inches wide by 11 inches high. To avoid distortion, place your vanishing points about 24 inches apart for a drawing this size. To accomplish this, tape three 11 x 14-inch sheets of paper together. Make your drawing on the center sheet and use the right and left sheets to place the vanishing points. These sheets can be folded back over your drawing for convenience in mailing.

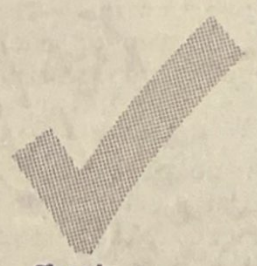
Make your drawing in pencil line with all of the major construction lines showing. Do not shade the drawing. Concentrate on the construction -- do not add any details such as

(over, please)

shingles, gutters, etc. Put in some low, rolling hills in the distance but don't add any other background. Be sure to indicate the horizon line. Do your drawing with an H or 2H pencil.

Mark this drawing -- ASSIGNMENT 2.

In judging your work we will be looking for two things: First, and most important, your understanding of the perspective principles explained in the lesson; second, the accuracy of your drawing.



Check
before mailing

IMPORTANT: Be sure to letter your name, address, and student number neatly at the lower left-hand corner of each assignment. In the lower right corner, place the lesson number and assignment number.

Your lesson carton should contain:

Assignment 1
Assignment 2
1 Return shipping label filled out completely.

Mail this carton to:
FAMOUS ARTISTS COURSE, WESTPORT, CONN.